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PROCEEDINGS

OF THE

Eleventh Annual New York State Industrial Safety Congress

Held under the auspices of the Department of Labor of the State of New York and published under the authority of The Industrial Commissioner, James A. Hamilton

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BUFFALO, N. Y., NOVEMBER 29-30—DECEMBER 1, 1927

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PROCEEDINGS OF PREVIOUS NEW YORK STATE INDUSTRIAL SAFETY CONGRESSES

Beginning in 1916 Industrial Safety Congresses were held in December of each year and the proceedings were published by the Department of Labor. There was no Congress in 1921. Sessions were resumed in 1922 and proceedings published under the title "Sixth Annual Industrial Conference." In 1923 the National Safety Council convened at Buffalo, and on pages 101–118, inclusive, of the "Proceedings of the National Safety Council for 1923" appear the papers read at the joint session with the New York State Department of Labor. No proceedings for that year were published by the New York Department. In December, 1924, sessions were held at New York City and proceedings published under the title "Eighth Annual Industrial Conference." In December, 1925, sessions were held at Syracuse and proceedings published under the title "Ninth Annual New York State Industrial Safety Congress." Sessions were held at Rochester on November 30 and December 1 and 2, 1926, and proceedings published under the title "Tenth Annual New York State Industrial Safety Congress."

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ELEVENTH NEW YORK STATE INDUSTRIAL SAFETY CONGRESS

TUESDAY MORNING, NOVEMBER 29, 1927, OPENING DAY

The Eleventh Annual New York State Industrial Safety Congress, held at the Hotel Statler, Buffalo, N. Y., convened at 10:40 o'clock, Hon. James A. Hamilton, Industrial Commissioner, New York State Department of Labor, President of the Congress, presiding.

PRESIDENT HAMILTON: We will open the session this morning with the invocation by the Rev. G. Paul Musselman, rector of St. Clemens' Episcopal Church of the City of Buffalo.

REV. G. PAUL MUSSELMAN: Let us pray! Dear Lord and Father of Mankind, forgive us our sins, negligences and ignorances, especially those towards our fellowmen. Direct, O Lord, this Congress in all their doings with Thy most gracious favor that our sense of responsibility for the life and property of our fellowmen may be increased and so quickened that everywhere the answer to the ancient question, "Am I my brother's keeper?" may be answered in the affirmative.

All this we ask in Thy name that Thou mayest grant it, world without end. Amen!

PRESIDENT HAMILTON: According to our program the next number, so to speak, would be the address of welcome on the part of His Honor the Mayor of this city. But he has been called out of town on official duties and cannot be present at this time. But we have here a gentleman representing him whom you will readily agree has a right to speak for law and order and everything else in the City of Buffalo. I am privileged to present to you James W. Higgins, the Chief of Police of the City of Buffalo. (Applause.)

ADDRESS OF WELCOME

By James W. Higgins, Chief of Police of Buffalo, Representing Mayor Frank X. Schwab

MR. CHAIRMAN, LADIES AND GENTLEMEN: In the absence of His Honor Mayor Frank X. Schwab I take great pleasure in welcoming to the City of Buffalo the Eleventh Annual Industrial Safety Congress of the State of New York, conducted under the auspices of the State Department of Labor.

I feel that we have a wonderful city here and I hope while you are here that you will enjoy yourselves. If there is anything that the Police Department of the City of Buffalo can do to make your stay in this city a pleasure just call upon us. We will be glad to do anything we can to help you.

Industrial safety is nothing new to me for this reason, that nine years of my life were spent in working in a machine shop as an apprentice and a journeyman machinist. I can appreciate very readily what you men have done to make it safe for employees in the different shops throughout the country. When I go into a shop today I see the different belts and the different gears covered over with guards. The first time I saw that I was very much surprised—way back in 1894, I think it was, when I went into a machine shop. There was nothing there to guard you then. You worked around gears that were bare, and around unguarded belts. Many is the time the sleeve of my shirt was caught in a belt and my arm went with it. It was lucky for me that the belt was not tight or I would not have an arm.

The improvements that you men have made are very surprising to me, and there is no question but that you have saved numbers of men and women from being maimed and saved their lives. In fact, I remember a little incident I had in the shop when I was a boy. This same thing I do not believe would happen today because there are so many safety men in every shop. I do not think they permit this particular thing to lie around. I stepped on a nail and for eighteen weeks I walked lame. At the end of eighteen weeks the piece of leather that went into my foot came out of the top of that member. I still have a scar on my foot. I do not know why it was that I did not develop blood-poisoning, considering the number of cases we see in the paper every day of industrial blood-poisoning from the prick of a pin, and the injured workers often die. I am surprised that I lived through the thing.

In the Police Department we have not been asleep along the lines of safety, etc. I remember back in 1919 I changed the system that the patrolmen had been working under in the City of Buffalo for twenty-nine years, to give the children greater protection at school. I will illustrate why I made that change at that time. Our third or day shift went to work at 7 o'clock in the morning and quit at 5 o'clock in the evening. One-half of them went to lunch from 10:30 to 12:30 and the other half from 12:30 to 2:30. When the first half was at lunch from 10:30 to 12:30 the children coming out of school from the morning session were unprotected in the streets. When the same children went into the school for the afternoon session of course they were not protected at the same crossings because the men were at lunch. In order to give the children 100 per cent protection I changed the system that the police had worked under for twenty-nine years.

We talk safety a lot in our Department. Every Monday morning we have all the captains in the Chief's office and talk crime and safety. To illustrate: Last Monday morning when they

came in I read off the weekly report. We compared the preceding week with the week of the year passed. Now in the week ended November 25, 1927, there were fifty-six persons injured on the streets of the City of Buffalo. In the week ended November 25, 1926, there were fifty-seven injured. There was one less injured last week than there was a year ago last week. In that same week for 1927 there was one person killed and during the same week of 1926 there were five persons killed. Of course, that is an improvement. As long as we have an improvement in the crime conditions and in the safety conditions we do not find any fault with the captains, but when there is not an improvement we "step on their necks." (Laughter.)

By the way, I was notified to come up here just about a minute before I started for this building, and I did not know why I was coming up here, so I hastily gathered these few figures: In 1927, the first ten months, there were ninety-five persons killed on our streets, and in the first ten months of 1926 there were ninety-seven persons killed, so there were two more killed in the first ten months last year than in the first ten months this year. So that is another improvement.

Now, ladies and gentlemen, in conclusion I want to offer your Chairman the key to the City of Buffalo. As I said before, if there is anything the Mayor's office or the office of the Chief of Police or the Police Department can do for this convention we are only too glad to do it. If any of you men or women care to take a ride in the patrol wagon we can give you that too. (Laughter.) I thank you. (Applause.)

PRESIDENT HAMILTON: I know you will be interested in looking at this instrument [holding up the key]. You will recall that the Chief said among other things that he would make our stay here pleasant. I think that we are all of one mind and would say to him that, while we appreciate that, we hope that he will not make our stay too prolonged. (Laughter.) At any rate, if any of the members of the convention feel that there are any difficulties arising that they may have use for this particular key, it looks as though it would open almost any place in the City of Buffalo or in Erie County, and I am sure that we want to convey to the Chief and through him to the Mayor of the city, our deep appreciation of this generous greeting, and also we want the Mayor to know that we are happy that he has as the Chief of Police someone who has actually toiled and has had that mechanical and shop experience and appreciates the value of safety not only for citizens on the street and the public highways, but also the safety for those who toil in the manufacturing institutions of the City of Buffalo.

It was very largely due to the generous and hearty invitation of the Chamber of Commerce of the City of Buffalo that it was finally determined to hold this Eleventh Industrial Safety Congress in the City of Buffalo. We feel that these gatherings are very largely educational in purpose. We aim to carry the message of industrial

safety to all parts of the State. Two years ago we assembled in the City of Syracuse. Last year we met in the City of Rochester, and we feel that we bring a message to the people of this part of the State, and hope that it will radiate throughout the entire State.

We are pleased just now to have the President of the Buffalo Chamber of Commerce here, and he is going to add his word of welcome. I am happy to present to you Lewis G. Harriman, of the Buffalo Chamber of Commerce. (Applause.)

CHAMBER OF COMMERCE GREETINGS

By Lewis G. Harriman, President of the Buffalo Chamber of Commerce

COMMISSIONER HAMILTON, LADIES AND GENTLEMEN: It is a great privilege to add my word of greeting to you who are attending this Eleventh Safety Congress. Chief Higgins, as a representative of the Mayor, has I am sure evidenced to you a very warm welcome officially from the Governmental authorities and from the people of Buffalo. I was very much interested that he further showed you the extreme interest of the Governmental authorities in the work with which you are all so much concerned.

I perhaps can say a word from the standpoint of business. A Chamber of Commerce perhaps represents in some respects better than any other organization the combination of business interests of the community. Those of you who know something of our Buffalo situation here know the intense interest which the Chamber has taken in safety work. The Safety Bureau of the Chamber has been one of its most important and I think one of its most useful activities. Of course, putting it on the lowest plane, it is good business and one does not need to apologize for that, but it is something, of course, a great deal more important than good business, because it has the angle of trying to put us in the proper way of being helpful to those whom we are privileged to help and to act in the industrial life of this great Nation in a proper humanitarian way.

I came this morning to this meeting, after having been on a trip of inspection with perhaps something more than a score of some of the busiest, most active men in this city We were inspecting the vocational schools of the city. Many of you know a great deal more, probably, than I about the vocational school movement. It is a wonderful thing to me to see the Federal Government, the State Government and the Municipal Government cooperating in this way. It serves to give our young men insight into the thing which can make them most useful to themselves and to the community, and the reason I think to speak of it at this Congress is that of course right there at the source of the training of high calibre industrial workers you see on every side great emphasis laid on safety, hygiene and all the things that you gentlemen and ladies are striving for. It is splendid to see that, and it was particularly a pleasant thing to see the interest which the men who

were on this trip this morning—and they are still on it—are taking in the same things that you are interested in.

On that trip were the heads of the largest industrial plants in this whole area, the most active and influential of the community, and they were only too glad and happy to give their time to see work of this kind.

Buffalo business men welcome this Congress to Buffalo. We hope your deliberations will be fruitful and helpful. We trust your stay here will be pleasant. The Chamber of Commerce, and particularly Mr. Guilbert, the head of the Chamber's industrial safety work—known I think to most of you—will do everything in our power to make your stay pleasant and we are very happy to have you with us. I thank you. (Applause.)

PRESIDENT HAMILTON: We deeply appreciate this attitude on the part of the Chamber of Commerce, and through its spokesman, the President, we want to convey to the entire Chamber membership our deep appreciation of the generous welcome and provisions they have made for our comfort and for making this gathering a great success.

We are all interested in safety, not only for others, but for ourselves. Many of us travel by railroad day and night and during that time our lives during the sleeping hours of the night are in the hands of faithful servants of the railroad, and it is to their interests and to ours particularly that everything is peaceful and quiet and safe. We have a group of representatives of those persons who care for our comfort and safety during the sleeping hours of the night, and I am happy to present to you just now the Pullman Porters' Quartette of the City of Buffalo, who are going to show you how they work. (Applause.)

The quartette rendered several vocal selections, which were generously applauded.

PRESIDENT HAMILTON: I know by your applause we can let our friends understand that we appreciate their contribution to the happiness and the success of this Congress. It certainly opens up to our minds the versatility of all kinds of workers. The next time we are traveling on the trains I do not have to suggest to you that you might gather the boys in and have a little more harmony.

THE IDEA BACK OF THE CONGRESS PROGRAM

Opening Address by Hon. James A. Hamilton, Industrial Commissioner, New York Department of Labor, President of the Congress

LADIES AND GENTLEMEN: At this, the Eleventh Safety Congress, held under the auspices of the Department of Labor, let me begin by pointing out the idea which lies back of the program for the sessions.

We have all preached industrial safety and accident prevention for a considerable number of years. We cannot but flatter ourselves that much good has been accomplished, and yet the fact

stares us in the face that industrial accidents are still with us in increasing numbers. At this Congress, therefore, instead of directing our attention to the matter of industrial accidents in general, an effort has been made to be specific by breaking up the problem and resolving it into some of its larger parts.

We have not been able to follow out this idea completely for the reason that there is not sufficient time and also for the reason that there are some subjects requiring attention at this gathering which do not fit in readily with this scheme. However, you will see that at our session this afternoon the accidents arising from "Falls of Persons" are to be considered. "Falls of Persons" seems like a prosaic title for a session, but when it is considered that measured both by amount of time lost and amount of compensation awarded, it is the greatest single industrial accident hazard in New York State today. The reason for the topic will, I hope, be clear to everyone. Both actually and relatively accidents due to "Falls of Persons" have increased greatly and it is my hope that something may be brought out at the sessions of this Congress which will be of assistance in checking accidents due to this particular cause.

Similarly, at our session Wednesday morning, where the two subjects of "Handling Objects and Falling Objects" are to be considered. Either of these subjects is well worth the deliberation of an entire session, but even combined as they are it is hoped that light may be thrown on them as accident causes which have a more direct effect than if they were not so singled out. Among compensated accidents in New York State the number due to both "Handling Objects and Falling Objects" exceeds the number due to any other cause, although in seriousness they are exceeded by "Falls of Persons."

Similarly, on Wednesday afternoon two different subjects are taken up which have no immediate relation with each other and yet have had to be put on at the same session because of lack of time to devote a session separately to each. "Infections" and "Problems of Handling Electricity" are well worth our attention.

As previously stated, it has not been possible to carry out this idea completely in the program, but at least a considerable step has been taken in that direction. In going after accidents in this Congress we are using the rifle method and not the shot-gun method. Perhaps this expression does not carry meaning to everyone now that the use of firearms is not so common as in earlier days. The idea is, however, that we are aiming at specific targets, realizing that unless the particular target aimed at is hit, we have missed our aim entirely. Or to put it another way, at this Congress we are like the religious leader who, after having many times discussed "sin" in general and had formed the conclusion that effort should be taken against it, has now changed his tactics and is directing his efforts not against "sin" in general, but against "sins" in particular.

And it is true that accidents in general aggregate an enormous total. It should not be forgotten that accidents in the aggregate

are made up of multitudes of individual accidents. In order to cope with the problem as a whole, study and analysis must be made of individual accident causes and means of prevention must be sought against each particular type of accident. (Applause.)

That there is need for this Congress and conventions of a similar nature is readily appreciated, when we analyze the figures of accidents reported in this and in other States. There is not a single business day in the entire State of New York when we do not have reported at least 1,000 or 1,500 industrial accidents, and for the fiscal year ended June 30, 1927, there were actually reported to the Department of Labor 518,297 industrial accidents to men, women and children, injured while at work. In the preceding fiscal year there were 441,401 accidents in industry reported—an increase in the 1926–1927 year of 76,896.

For the month of October, just passed, there were 169 men, four women and three children who died in this great Empire State as the result of being injured on the job, a total of 176 persons. When we have the magnitude of these figures before us we can well understand that this is really something that should engage the attention of all people who are interested in the industrial life of our great State.

Workmen's compensation is a boon for the worker when he needs assistance, and we are proud of the fact that New York State, living up to its model of "Excelsior," leads the way in this respect, and our great statute has been copied and patterned after by practically all of the States in the Union. When the United States Congress last March, just on the final day of its session, passed a Federal Insurance Act, they took as the basis of that Workmen's Compensation Law the State of New York.

When we realize that in the State of New York there were compensation awards to approximately 100,000 injured workers during the fiscal year ended June 30, 1927, and that there was awarded to these injured people more than $28,000,000, it would seem that that was exceedingly generous help and help given at the proper time.

But we must realize that workmen's compensation at best is simply a palliative. It is not a cure, because the man who has lost his finger, or who has a stiffened joint, or perhaps has lost his hand or his arm, or has a blinded eye, must carry that to the grave and there is no remedy for that. Then besides that, while we feel that workmen's compensation does graciously and generously shift part of the financial loss from the shoulders of the victim of the industrial accident, nevertheless it is better by far that we attempt some curative process rather than these mere palliatives.

There is but one cure and that is accident prevention. That is the reason why we are gathered here today, and will be for the next few days, to consider ways and means of bringing about a reduction in this great industrial accident toll that we have been having in the State of New York.

We are glad to welcome the representatives of other States and also some of the representatives from Canada today, because we feel that in a gathering like this, with an exchange of opinions based on experiences under which we have been living, that surely out of that some good may come.

When we realize that industry through Management and the great captains of industry are interested in production, so that there may be added wealth in our country; when we know that they are interested in everything that pertains to the advancement of their business, we can well appreciate that if all of us can lay just as much stress upon accident prevention as we do upon the question of production then we are going to get something that is well worth while. We need to go at this in the spirit of cooperation, because while the State provides specifically by law that hazardous machinery must be guarded, there is a corresponding duty on the part of those who work at these machines that they shall be properly instructed and that they shall use those guards that are there provided.

We must recognize that no matter what element of society we represent we are all interested in human life, and if we can take that spirit throughout our deliberations and feel that the saving of even one life in the shop or the business in which we are employed, if that can be accomplished during the year then our efforts will not have been in vain.

It is a splendid thing that we have accident prevention competitions throughout the State. It is a great thing to have that safety flag flying permanently from the top of every business institution in the State. It is our hope that as a result of our deliberations here and with this spirit of harmony and cooperation that we can in the next year so successfully attack this problem that we will be in a position to show to all of the States of the country, and the nations of the world, that New York State, as the Empire State of the Union, is living up to and measuring up to its responsibilities as the leader of the industrial life in the Western World. (Applause.)

At the conclusion of his opening address President Hamilton said: "We are happy, indeed, to have a representative of the United States Government here, because the Federal Government is likewise interested in accident prevention. We had hoped that the United States Commissioner of Labor Statistics would be personally here with us this morning, because probably no man in Governmental service today has had such a vast field and practical experience as the Hon. Ethelbert Stewart, United States Commissioner of Labor Statistics. But he really has been worn out in the forty or fifty years of his great work in this country. He has prepared a paper, and it was just simply because he was physically unable to come that he is not here in person. We are glad to have his representative, Mr. Baldwin, read that paper for us at this time." (Applause.)

THE NEWER INDUSTRIAL ACCIDENT PREVENTION AND WORKMEN'S COMPENSATION PROBLEM

By Hon. Ethelbert Stewart, United States Commissioner of Labor Statistics, Washington, D. C.

(Read by Charles E. Baldwin, Assistant Commissioner of the Bureau of Labor Statistics, Washington, D. C.)

MR. BALDWIN: Mr. Chairman, Ladies and Gentlemen: — I know you will regret, as I do, that the Hon. Ethelbert Stewart, Commissioner of Labor Statistics, is not here to present this paper himself. He would have me express to you, as best I can, his regret at not being here. He wanted to be here; he is intensely interested in the purposes of this Congress and if it would have been possible for him to do so he would have been present. Following is Mr. Stewart's paper:

The industrial accident prevention problem, as well as the workmen's compensation problem, that we are facing most seriously to-day is the problem of the small establishment.

The large concerns like the United States Steel Corporation, the International Harvester Company, etc., are not only able but find it profitable to spend the money that is required to equip their plants with safety devices and to install safety methods and schemes which reduce their accidents practically to a minimum. Corporations of this type are practically all self-insurers and their employees are therefore thoroughly protected in case of accident.

The serious fact, however, is that over 40 per cent of the manufacturing establishments in the United States employ from one to five persons each, and practically 28 per cent of the manufacturing establishments employ from six to twenty wage-earners each. The average in the former group is 2.7 wage-earners per establishment, the average in the second group is 11.2 employees per establishment. The total number of employees in these two groups is practically 824,000 workers.

It is in these small establishments that accidents are on the increase.

It is not my purpose to go into the details of causes of increased accidents in smaller plants. As a general proposition it is due to the tendency to push production to the highest possible point by means of improved machinery, new mechanical appliances, conveyors, power hoists, power trucks, and by speeding up the workers. These new devices are not accompanied by the same safety equipment that the large corporations provide when they install the same devices. There is seldom a safety organization in the small plant. The manager and the superintendent or foremen are not acquainted with modern safety rules, and the plants are too small to have a real safety man.

We are spending an enormous amount of money on safety work, and it is having a tremendous effect in the way of accident prevention, but it is being spent in and by the large plants; and

the large plants are comparatively few in number. Only nine-tenths of 1 per cent of the manufacturing establishments employ from 500 to 1,000 wage-earners each, and the average of employees in this group per establishment is 690. The next higher group employing 1,000 and over constitute only one-half of 1 per cent of the total number of establishments; yet these employ more than 24 per cent of all employees and have an average of 2,194 workers each.

We are therefore faced with a peculiar situation—a very few establishments doing an enormous amount of safety work and making an enormous amount of noise about it and really reducing their accident rates to a very wonderful degree; on the other hand the great majority of plants—over 90 per cent—doing nothing or practically nothing in the way of safety work and saying nothing about it, and having a rather startling progressive increase in accidents.

With the passage of the Workmen's Compensation Acts in nearly all of the States of the Union we settled down to a smug reliance upon the operation of these laws to take care of the destitution that had formerly resulted from such accidents. The reason that workmen's compensation legislation was put through the various State Legislatures so easily was at bottom because everybody knew that somebody was having to pay for the results of industrial accidents. The injured workman and his family were being taken care of by charitable organizations and the charitable organizations were getting their money from business men and from persons of wealth who were charitably inclined; or they were being thrown upon the taxpayers through out-door relief funds and through almshouses. So the general public was pretty well prepared for a specific proposition to provide some legal remedy through which the injured worker should be cared for, in part at least, by the industry in which he was engaged at the time of the accident, and thus the burden be distributed over the whole population by allowing the employer to charge the insurance premium or the cost of workmen's compensation into his general cost, just as he did taxes and fire insurance, and make it a part of the price of the commodity produced and spread the burden over the entire consuming public.

Once this legislation was on the statute books we settled back with a sigh of relief that all our social troubles from that source at least were at an end.

The machinery to take care of these risks assumed three forms —self-insurance and private organizations of insurance carriers and State insurance funds, whether competitive or monopolistic. The private insurance organizations group has with the lapse of time split into two groups—the mutuals and the stock insurance companies.

Now let us see what has happened. The large employers of labor, which do not comprise more than 2 per cent of the total number of establishments, have become self-insurers. The next

group—which still comprises a very small percentage of employers—have formed mutual insurance organizations to carry their risks on a cooperative basis. The great mass of employing establishments, which employ twenty people or less, were left for the stock companies and the State funds. Of course I do not mean to say that the stock companies and the State funds do not get a reasonable share of the larger plants; nevertheless the fact remains that the cream of the insurance business is in the hands of self-insurers and mutual companies.

The insurance companies find that with the high accident rate in small plants and the increased accidents in small plants the small plant accident insurance taken by itself is a losing game.

Take it in the State of New York, the experience of all insurance carriers—stock companies, mutuals and State fund—combined, taking the two years 1924 and 1925 as a fair sample of what is happening. Twenty-five per cent of the firms insured were paying the minimum premium in their class, and from this group the premiums earned amounted to $1,830,630, or 2.14 per cent of the total premiums earned. But the losses sustained in this group were 2.15 per cent of the total losses sustained, and 61.8 per cent of the premium earned.

But this is not so startling as the next group, which is composed entirely of small plants, where the premium paid is $24 or less per year. This constitutes practically 17 per cent of the total number of plants. But note this—that while the premium earned from this group was 1.28 per cent of the total premium earned the losses paid were 1.97 per cent of the total losses paid, and within this group 94.2 per cent of the premium received was paid back in losses. Of course the remainder does not anywhere near pay the overhead and operating costs.

In the next group of small establishments, paying $25 and less than $50 premium and constituting practically 17 per cent of the total risks, the premium earned was 2.71 per cent of the total premiums earned, while the loss was 3.97 per cent of the total loss and 89.8 per cent of the premium earned. When you compare these with the higher groups, say the group that pays $30,000 and over in insurance premiums, while this group constitutes only four-hundreths of 1 per cent of the total number of firms the premium earned from this group constituted 9.2 per cent of the total premiums earned, the percentage of loss was 7.85 per cent of the total losses and 52.4 per cent of the premium earned, you will note the enormous difference in the percental cost of carrying the small plant as compared with the large one.

The result of this is that the stock companies either put the premium rate so high that the small employer cannot pay it or they refuse to take the risk in any event. In other words the list of prohibited risks is expanding to cover in many States such industries as coal mining, and the smaller type of sawmill, and is gradually tending to exclude all the smaller establishments.

One of the most far-reaching subjects, therefore, in connection with this whole accident prevention and accident insurance question is, what shall be done in cases of extra hazardous industries and small establishments which the insurance companies refuse to insure, and which are not able to qualify as self-insurers and which are too widely scattered and too unorganized to form mutual insurance organizations?

The States most seriously affected are probably Georgia, Illinois so far as coal mining is concerned, Missouri, Oklahoma, Tennessee, Texas, and Virginia. In fact it is more or less true in all States not having some sort of State fund.

A very large number of States report that the situation as regards workmen's compensation insurance for these small plants is steadily growing worse. In Arizona and Utah private insurance companies are required to accept any risk that is offered them. In the States having competitive State insurance funds while the private insurance companies are not compelled to take undesirable risks the State fund is so compelled, with the result that the small and expensive risks are thrown into the State fund. This puts the competitive State funds at a disadvantage and may ultimately operate to create a situation where the competitive State compensation insurance fund will have to be supported by general taxation.

The question of compelling private stock companies to accept all insurance business offered has been referred to. This is the law in Arizona, which, however, is not entirely protected against certain methods by which it can be sidestepped; in other words the insurance companies can make the conditions of carrying this undesirable business so unpleasant that the purpose of the law is more or less defeated.

In Massachusetts they are at present experimenting with a compulsory insurance law for automobile drivers. Every automobile must carry liability insurance. This being compulsory upon the owner of the automobile it is also made compulsory upon the insurance companies to accept these risks. The insurance companies, however, are partially protected at least by a clause which says if any insurance company has reason to believe that a driver or owner of an automobile is an unfit person to operate a car it can bring this evidence before the State licensing bureau and the license to operate a car will upon sufficient proof be taken from this person. But if the State licensing bureau insists upon issuing the license then the insurance company must take the risk. The operation of this law will be watched very carefully by those interested in workmen's compensation, to see whether or not it can be made applicable to the accident insurance problem here discussed.

Of course if the insurance companies can be compelled to carry these small and dangerous risks they will in the nature of things require that the smaller plants give more attention to safety work and take positive and intelligent steps toward reducing their number of accidents. In the meantime, however, we find that in

some States in an entire industry, namely, bituminous coal mining, the employees are not insured against the result of industrial accidents, notwithstanding the State law which is supposed to be in effect. Large numbers of employees in other industries are not insured in fact, notwithstanding the existence of the law and the paper evidence of insurance in some cases.

To the extent that this picture is true society is fooling itself. We believe that we have secured for the workman at least a reasonable degree of compensation for accidents, enough to keep his family from suffering and to keep them secure from the need of charitable contributions; while as a matter of fact when an accident occurs they have no protection and are thrown upon public charity just as they were before the enactment of Workmen's Compensation Laws, notwithstanding the fact that the cost of the insurance which society is supposed to have, has been charged into the price of the commodities produced and is being paid for by the consuming public. In other words, to the extent to which this picture is true society is paying for something that it does not get, and the purpose of Workmen's Compensation Laws is to that extent being defeated, notwithstanding that it is being paid for.

While you people in New York are not facing this difficulty in its worst form you are facing it to the extent that these undesirable risks are being driven into the State Fund, which in the nature of things cannot select its business, and which in the nature of things can have no prohibited list.

It must be admitted that for the length of time in which Workmen's Compensation Laws have been in operation in the United States and for the length of time in which active and intensive accident prevention work has been going on we have achieved along both lines most wonderful results; and while we may be fairly well satisfied with the record of the past we should not blind ourselves to the fact that the operation of the laws is developing certain difficulties, that the method and plan of our private insurance companies are developing difficulties which seem to me to be inherent in their method, which produce a cost of doing business which is so great as to develop a premium rate which can only be paid by the largest and wealthiest corporations—which in turn are in a position to refuse to pay it by becoming self-insurers or by developing cooperative mutual companies, which from an insurance point of view amounts to practically the same thing as self-insurance; this in turn making necessary the high rates which the smaller concerns cannot pay, while tending at the same time to eliminate from their field all the risks except those who either cannot pay or whose accident rate is so high that the insurance companies cannot carry them with profit—in other words a scheme which defeats itself and which in turn reacts upon the operation of the Compensation Laws to partially defeat them, thus throwing back upon the workers and the community the evils, within this group, for which Compensation Laws were enacted and compensation insurance carrier companies were developed.

It is too early in the development of these menacing conditions to discuss dogmatically any schemes for their solution, but these clouds on the horizon which at first blush may seem to be no bigger than a man's hand are in fact shaping themselves into very definite outlines; and it is important that the business interests of this country should see the outline of the conflict and should begin to think about wise methods of solution. (Applause.)

PRESIDENT HAMILTON: I believe it is your wish that, through Mr. Baldwin, we extend to Commissioner Stewart our thanks for this interesting and valuable paper and also our prayers for the Commissioner's early restoration to health so that he may be about his duty with his old-time vigor and enthusiasm.

In our State we have also been happy in the spirit of cooperation that has existed between Management and Labor and at each of our annual gatherings we have had tangible and real proof of that. We are going to have it again at the session this morning.

I am very happy, indeed, now to present to you Mr. Maxwell S. Wheeler, the President of Associated Industries of New York State, Inc. Mr. Wheeler! (Applause.)

ASSOCIATED INDUSTRIES' CONTRIBUTION TO THE SAFETY MOVEMENT

By Maxwell S. Wheeler, President, Associated Industries of New York State, Inc.

MR. CHAIRMAN AND FELLOW MEMBERS: It is always very embarrassing for me to attempt to talk. Unfortunately, I am not a speaker. It is especially embarrassing to follow my friend, Mr. Hamilton. If it were possible I would follow the example of the Congressmen who ask leave to print. That would save your time and at the same time save you from being bored, as I would not have to read it and it would also save my feelings.

It always has appeared to me that in the general scheme of accident prevention and the conservation of human life in our factories there are three elements that are directly involved, one in a predominantly intimate personal way and the other two in a more remote way. I refer to the three factors that complete the cycle of production and marketing of goods in its broader sense: First, Capital, which makes possible the employment and remuneration of the second factor, Labor, so that it may produce for the benefit of the third factor, the Consumer, which, in turn, pays Capital for its enterprise and the use of its stock in trade. Financially it makes less difference to Capital and the Consumer than it does to Labor, whether or not Labor suffers injury or death, because Labor can be replaced with comparative ease; but sentimentally and financially Capital is interested in Labor's welfare and it makes a difference to Labor whether or not it is hurt or killed. It also makes a lot of difference to Labor's wife and children, because there fol-

low suffering, privation and loss to the dependents of much that makes life worth living.

That, I think, is a truthful, dispassionate statement of the case. Regardless of what may be the attitude of Labor toward Capital, I have never met an employer who was not interested in the well-being and advancement of his employees and we have ample evidence of the interest which the Consumer, which is the public, takes in the affairs of our workmen. But if we eliminate sentiment we have got to admit that the interest of Capital and Consumer feels pain only when pinched on the pocketbook nerve, while the interest of Labor is represented by success and happiness on the one hand and privation and death on the other.

With these facts so palpably obvious I would like to have some one explain, if it can be done, why it is so hard to get the co-operation of so many of our workmen in efforts to reduce the toll of industrial accidents? You see I am assuming it is true that it is hard to get the cooperation of the workmen because I have been told it is so by many men closely in touch with the movement for accident prevention. The queer part of it is that we now have little or no trouble in enlisting Capital, through the medium of the Management it employs, in the battle against accidents. I presume the reason for that is that Management (meaning the executives in charge of plants) is getting to know better every day that it is not a class apart, but merely an integral part of the working force in any plant, a cog in the wheel of production just as truly as a man on a lathe or a punch press or any other piece of machinery. Time was, at the beginning of the era of mass production, when Management thought pretty well of itself, when it set itself up to be a "little tin God." But that state of mind did not last long and there is not very much of it in evidence today. Of course there is some. You cannot eliminate it entirely any more than you can eliminate the careless, thoughtless workman. That sort of Management is not of much use to the safety movement and it is one of the jobs of an organization such as Associated Industries to educate and change the point of view of that Management, in the same way that it is the duty of labor organizations to educate and change the point of view of the careless workman. Associated Industries has spent a lot of time and money in the effort to educate the Management; and I think I can say also that we are making headway as educators of the workmen.

I am not at all convinced, however, that the worst offender on the employers' side is the Management that frankly does not care, and does not pretend to care, whether it has one or fifty accidents a day. I am inclined to believe that an equally great menace to the real success of the safety movement is the Management that uses the safety movement merely as a collector of credits by which insurance premiums may be saved; the Management that sets up a safety organization which, as a popular phrase during the war expressed it, is "only a scrap of paper" and which is forgotten as

soon as the credits are entered in the books of the insurance company. I am told that there are a lot of such Managements, though I am glad to say I have never met any. The Managements I know are just as keen for business success as any others. They are, however, just ordinary, every-day men and women, with the same family ties, the same ambitions, the same troubles and the same joys that the man and woman at the bench have; practically all of them are working for wages just as you are doing and a good many of them started their careers at the bench. I do not want anyone to tell me that as a rule these Managements are not just as interested in the safety of their employees as are the employees themselves, because I know they are. But, just the same, I know there are some of the other kind, too, and I promise you people here that Associated Industries will continue to work for the education and conversion of employers who are not now honestly and energetically enrolled in this great movement for the conservation of the lives and limbs of our industrial workers.

This is not an empty, useless gesture—but an honest promise which most of you know is partially fulfilled. For five years a member of our staff has been at the disposal of member companies as a safety speaker. At the invitation of plant managements he has been going into plants in all sections of the State, placing the matter of cooperation in accident prevention before employee and foreman groups in a plain, business-like, sensible manner. His services have been in constant demand and a majority of the safety meetings so arranged have been strictly on company time where it was possible to reach every employee.

During my first year as President of Associated Industries we supplemented this great educational work in a practical business-like way, by enlisting the support of foremen in a contest among member plants to prevent accidents. Commissioner Hamilton has cause to remember that first contest because I think he was called upon to sign some fourteen or fifteen hundred certificates of merit which were awarded to foremen at the Safety Congress that year. The second year—last year—we enlarged the scope of the educational endeavor by making awards to member plants of Associated Industries and over 300 plants entered the contest and went through thirteen weeks of intensive accident prevention work. This year—1927—we enlarged it a little more by throwing the contest open to any plant in the State, regardless of whether or not it was a member of Associated Industries. We began the contest in September with more than 700 entries, which was somewhat reduced by eliminations for cause, but we will close the contest on December 3—Saturday of this week—with what we believe to be the biggest entry list of any contest of the kind ever held anywhere, and with an experience which, when taken in conjunction with the results of the contest in 1926, will constitute the most enlightening statistical record of accident frequency and severity in existence anywhere. So you will see that while some have been doing a lot of talking and getting nowhere, we have been working

without much noise to educate employers and workmen and to lay the foundation for statistical data which will be invaluable in measuring the results of future efforts in accident prevention.

Up to this time we have been working in the dark, as it were, making a lot of effort and sacrifice, but not being very certain when we got through as to whether or not we had accomplished anything, because we had little, if anything, with which to compare our results. The figures that the accident prevention campaigns of Associated Industries are storing up will furnish that background hereafter and we will be able to tell if we are going forward or falling behind in the war on preventable suffering and death. I believe that this contribution by Associated Industries to the safety movement will be appreciated more in future years than it is now.

I think that is about all I can say at this time that will be of any interest. Of course, all of you—or most of you, anyway—are practical safety men, with an intimate knowledge of the problems of the safety movement. You know that what I have said here is what everyone knows—and that is that no campaign against preventable accidents can be successful unless it has the active and whole-hearted cooperation both of Management and of employees. We have developed methods during the past—especially since 1914—which insure the success of any campaign that has the backing of all parties in interest. We cannot fail to succeed. If we save one arm, one eye, or one life, we have justified every effort. But the saving, from any angle you look at it, is so tremendous that I sometimes think we do not realize what we are doing. The realization of the necessity for accident prevention work, however, is growing fast. We have had a little better cooperation this year than we did last year; and will have a little better next year than we had this year; and a little better the year after that. The development may be slow, but it is steady, and the thought I want to leave with you is that you, personally, everyone of you, can make your own life more complete and happy and materially help your fellow-men if you contribute your brains and ability to the safety movement. (Applause.)

PRESIDENT HAMILTON: We certainly want to thank our friend, Mr. Wheeler, for his contribution to the discussion this morning, and we feel happy that he has helped to wash away so many of our troubles.

The other element in our industrial life and in our State, the actual worker, is also represented, and we are glad now to introduce our old-time and genial friend, John Sullivan, the President of the New York State Federation of Labor. (Applause.)

HOW TO LESSEN ACCIDENTS IN THE BUILDING INDUSTRY

By John Sullivan, President of the New York State Federation of Labor

MR. CHAIRMAN. LADIES AND GENTLEMEN, AND FRIENDS OF THIS GREAT MOVEMENT IN WHICH WE ARE ENGAGED: I assure you that the New York State Department of Labor is to be complimented and congratulated for bringing about year after year these Congresses. I know of no work so laudable as the work of this Congress. I readily agree with the statement of Commissioner Hamilton this morning that if we are instrumental in the saving of one life our time is not wasted.

I note with a great deal of pleasure that as a result of these Safety Congresses in a good many industries accidents have decreased. I notice, however, that they have considerably increased in another branch of industry, and that is the construction end of it. It is appalling to read in the newspapers of the number of accidents in the buildings that are going up throughout the State of New York, and I believe that if more care had been taken a considerable number of those accidents could have been prevented. Some of them are almost criminal in character—for instance, on any large construction or any large building that is erected by steel. I know when I was a boy when buildings were started they commenced at the ground and built up. But now they start to build at the top and build down. But of course I do not want to be misunderstood that the Labor Movement in the State of New York is going to in any way interfere with progress or new development or new devices of any character. In fact, we welcome them, but there is considerable space that is left open in those new buildings, a space of nine or ten floors with no covering whatever, where you people can read in the newspapers any time of bolts, nuts, hammers, or some other tool or implement falling and striking the mechanics who are working below, and in a number of instances they are killed outright, and in other instances they are incapacitated for their whole lifetime.

I imagine that could be remedied and it should be remedied. I believe that this Congress should direct its attention to that one fact. The cause of all this is the lack of a sufficient number of competent inspectors.

Last year I made an appeal to this Congress, if you will remember, that the number of inspectors should be increased. I am glad to say that as a result of that appeal additional inspectors were put to work in July of this year.

I want to say, ladies and gentlemen, that that is not at all sufficient. The number should be greatly increased and they should not be men of theoretical experience, but they should be men who have solid, practical experience, men who know their business and who know how to introduce measures that will prevent accidents.

I have some figures here, and I hope I am not going to burden you, because they are very brief. As a representative of the

workers in the State of New York I imagine you will excuse me because I am only following the example set by the representative of your industries. This is the second time (last year was the first time) that I have read a paper on any subject. I am not in the habit of doing that, but in view of the importance of this subject matter that we have been engaged in I believe the proper thing to do is to know what you are talking about and not talk at random or extemporaneously so that no misconstruction will be placed upon what is said.

Therefore, I will read this little document, which is brief and I am not going to bore you, because it will not last long. There may be something contained in this paper that may be of benefit to this Congress—at least, I hope so.

It is my pleasant duty to bring to you as its President the greetings of the New York State Federation of Labor and an expression of its sincere hope that the deliberations of this Eleventh Annual Session of the New York State Industrial Safety Congress may be fruitful of designs and accomplishments that will aid in further reducing the number and serious character of industrial accidents within this State.

We are all glad to read in the statistics provided by the New York State Department of Labor assurance that there has been a hopeful reduction in workplace accidents within this State during the year that has elapsed since this Congress last assembled. The record of compensated deaths due to industrial accidents for the year ended June 30, 1927, shows a total of 1,042, a reduction of sixty-eight over the year closing the same date in 1926. When we compare this total with the official estimate issued at Washington for the same annual period, showing that during the year 23,000 workers have been killed in the forty-eight States and the District of Columbia as the result of industrial accidents, we must accept the conclusion that the safety methods used in our workplaces are accomplishing results. New York State has approximately 10 per cent of the population of the United States and ranks first in the industrial and commercial States with a large lead over its next nearest competitor, Pennsylvania. Yet we are responsible for only a trifle more than 4 per cent of the deaths caused by industrial accidents throughout our Nation. We also find some encouragement in the disabling accident record compiled from the number of workers compensated for disability under our Workmen's Compensation Law during the past fiscal year. Notwithstanding the increase in scope of the Compensation Law secured by broadening amendments the number of compensated accidents for the last fiscal year ended on June 30 last is about 700 less than in the year which terminated on June 30, 1926.

An examination of these latter records demonstrates clearly that there is a considerable reduction possible in disabling accidents when competent official factory inspection is combined with voluntary workshop safety methods. In the 1926 annual period the

number of such accidents occurring in manufacturing was 41,245. During the 1927 annual period these accidents in manufacturing industries were reduced to a total of 39,837, or to 1,408 less than in the preceding twelve months. The remainder of the total of 98,-984 disabling accidents for the same annual period are distributed chiefly among the transportation and public utility and construction trades and occupations, and one of these great groups—construction—shows an increase in accident totals of nearly 1,200 over the 1926 annual period. It is well known that official inspection for safety of ways and means within the construction and transportation and public utility trades and occupations is lax, due to insufficient inspectorial staffs and authority to regulate. Workplace safety methods are not nearly so well organized nor as effective as in the manufacturing trades and occupations. As an illustration of individual laxities there might be mentioned the absence of enforcible protective regulation for those workers engaged in handling high tension electric light and power wires. A bill to supply such regulation was introduced in the Legislature of 1927 at the request of the workers so employed, but it failed of enactment.

One can clearly see in the facts furnished by the records I have quoted that continuous reduction in workshop hazards and therefore in totals of industrial accidents is possible and is happening when preventive methods are put to work and kept at work. This is proven by the experience in factories where satisfactory State inspection is supplemented by the work of shop committees devoted to devising and enforcing safety methods. The task before this Congress is to propose a system of regulation and inspection, coupled to safety campaigns on the job, for the construction and transportation and public utility employments. At the session of 1926 I offered on behalf of the New York State Federation of Labor as a contribution towards this end an immediate increase in the number of State inspectors for building operations, pointing out that the number of inspectors detailed by the State Department of Labor to this special field was very small. The Legislature at its 1927 session made provision for six more such inspectors, and these have been assigned to construction inspection, commencing about July 1 of this year. This staff may have to be considerably amplified to cope with the problems confronting us. It is not so practicable to create safety cooperating committees on building jobs, as there are several contractors employing wholly separate groups of workers engaged in the construction and finishing of a building or a subway. We will have to depend chiefly on the Labor Law's requirements and such regulatory codes as may be established under the authority conferred by that statute.

The State Department of Labor in its *Industrial Bulletin* of August says: "One striking thing is the way in which construction is rising in importance in the number of injuries it causes. This is partly due to the great increase in building work and may be due in part also to the greater speeding-up in construction with

its effect on the hazards of the industry. Five years ago construction accounted for 10,000 accidents out of a total of 58,000. Last year it accounted for 21,606 accidents out of a total of 98,984."

This subject occupied the attention of our recent Sixty-fourth Annual Convention at Syracuse, where the notable increase in accidents on construction was discussed at length. It was finally decided that: "The convention go on record as endorsing a campaign that is being conducted along the lines of safety, and that we do everything in our power to have the Building Code amended to take care of the conditions that are now existing—namely, where no covering is required only where the men are working on steel floors, but five or six stories thereunder there is no protection for the men at work. The code should be amended in this respect." The present plan of erecting high buildings allows setting of iron and steel frame work for several floors at one operation, leaving all of the intervening space between the highest point in the operation and several stories below open. Falling materials and tools, and sometimes human beings, are given considerable space to pass through and gather velocity in their dangerous flight. A revision of the Industrial Code applicable to building operations to meet this developed hazard and overcome it would seem to be the first step towards a reduction of accidents on construction.

Special consideration will also have to be given to the transportation and public utility employments. Although nearly all workers engaged in these employments come within the provisions of the Workmen's Compensation Law and are entitled to its benefits, yet only a few are subject to the State Labor Law. The Public Service Commission has jurisdiction over all railroads and public utility corporations, while automobile and horse-driven vehicular transportation is usually subject to local traffic ordinances under either State or local licensing systems. Except in the cases of repair shops and construction operations conducted by railroads, the State Department of Labor has no jurisdiction, and consequently no inspection is made such as is required for factories and mercantile establishments. The total number of accidents in this group of employments for the annual period of 1927 was 16,666, or about one-sixth of all the disabling accidents for the same period. To improve such safety methods as now exist and to reduce this group total we will need to bring about cooperation between the State and local authorities having jurisdiction and the various managements. The railroad labor organizations, the electrical workers', stationary engineers' and teamsters' unions are anxious to participate in any campaign to lessen the hazards of their employments, and offer their services freely and most willingly.

It is saddening to realize that more than 1,000 have lost their lives and nearly 19,000 of the almost 99,000 workers injured at work in this State during the past fiscal year have been so badly mutilated that they are permanently incapacitated to follow their

former occupations—and it should spur all of us to renewed and more resultful cooperation in the future. The usefulness of the work of this Congress can only be measured in the lessening of industrial accidents. This lessening can only be accomplished by improving and extending workplace inspection and safety methods and devices. We have concrete evidence that these agencies of safety, when fully and intelligently employed, bring results. Let us therefore here determine that these tested agencies shall be amplified and improved. To this consummation I am authorized to dedicate the energies and resources of the New York State Federation of Labor and its many affiliations. We know of no more important immediate objective to attain than the preservation of the life, limb and health of the workers of our State, and our combined hands are outstretched to clasp in cooperation the hands of all others engaged in the same humanitarian cause. (Applause.)

PRESIDENT HAMILTON: We are deeply grateful to Mr. Sullivan, President of the State Federation of Labor, for this contribution to the symposium this morning.

The session adjourned at 12:15 o'clock P. M.

TUESDAY, NOVEMBER 29

AFTERNOON SESSION

General subject: "Falls of Persons."

The meeting convened at 2:40 o'clock, President Hamilton presiding.

PRESIDENT HAMILTON: As our program indicates, this is the Eleventh Annual Congress, and we have with us someone who has been present at each and every one of the eleven and has seen this movement grow. I am happy to introduce as the presiding officer of this afternoon that gentleman who has attended every single one of these Congresses—our good friend, Dick Cullen, Member of the Industrial Board. (Applause.)

HON. RICHARD J. CULLEN, Member of the Industrial Board of the State of New York, took the chair.

CHAIRMAN CULLEN: Ladies and Gentlemen of the Congress:—We are a little late in getting down to the real business of the session this afternoon. Commissioner Hamilton this morning covered in a general way the topic which we have to discuss here this afternoon. It would serve no useful purpose in my going over that ground again, and too, I realize that it is the duty of a Chairman to preside, not to make speeches.

The papers which have been prepared and which will be read this afternoon, I am informed, are quite lengthy and go thoroughly into the subject.

This subject, "Falls of Persons," is one upon which there should be the greatest amount of discussion and I would rather devote whatever time has been allotted to the Chairman to a general discussion, which will follow immediately after the reading of the papers, and I trust you will all take part. With that in mind we will now proceed with the business of the session by hearing Mr. H. Weaver Mowery, Past President of the American Society of Safety Engineers, discuss the subject. (Applause.)

ACCIDENTS FROM UNSAFE WALKWAY SURFACES

By H. Weaver Mowery, Secretary, National Safe Walkway Surface Code Sectional Committee, American Engineering Standards Committee

MR. CHAIRMAN, LADIES AND GENTLEMEN: We have seen the "Fall of Man," in which the Grim Reaper gloats over his records. You will recall that toward the end of the film he was a little in doubt as to whether or not he should gloat very much more, because people were beginning to think about this question of the fall of persons and perhaps by acting upon it would deprive him of the principal source of casualty.

However, the results of the last year or so from this particular casualty cause would indicate that the Grim Reaper still has plenty of opportunity to chortle with glee because your records certainly have been astounding. The most amazing thing is that these casualties from falls of persons are on the increase.

Let me quote from a recent issue of *The Industrial Bulletin* of this State, which is issued monthly by the Department of Labor, on the subject of "Falls in Industry During 1926 to 1927." This will give you an ample confirmation of the figures given in the film to show you that the experience of the State runs parallel:

> "The most costly of all injuries from industrial accidents for which compensation was awarded were those caused by falls. Not only did falls cause more deaths among workers than any other kind of accident, but they caused the greatest loss of time for non-fatal injuries and the largest number of permanent and total disabilities. In addition to that, they caused more of the serious injuries which involve high medical costs.
>
> "Not only are falls causing the most serious accidents and the ones that result in the greatest total cost to industry, but they are also increased more rapidly."

In going into detail this report states that, out of a total of 8,279 falls from elevations, 2,203 were from or on stairs alone. They were such accidents as slipping, stumbling, loss of balance on the stairs where there was nothing to indicate why the workers slipped or tripped.

There were 2,860 casualties from slipping on wet floors, icy or greasy surfaces or on slippery objects lying on the floors. Slipping or stumbling when handling heavy or unwieldly objects resulted in injuries to 2,503 persons. There were, therefore, at least 7,566 casualties due particularly to unsafe walkway surfaces.

That is quite a record for New York State alone. The amazing part of it all is that we have known all these things for years. To show you that these facts are not new, let me quote from a paper entitled "The Common Cause and Prevention of Industrial Casualty," presented before the American Society of Safety Engineers ten years ago:

> "General recognition of the seriousness of a public hazard is often manifested in an interesting manner. A few years ago the saying 'Don't monkey with the buzz saw' was heard throughout the land. Effective guards have made comparatively safe the operation of the buzz saw and that phrase now is seldom heard. Instead the cautionary word of the traveler, the laborer, the boy in the street is 'Watch your step.' That phrase, so commonly used, shows general recognition of the fact that *slipping and tripping is the common cause* of casualty. And, confirming general opinion, we find that official reports of State Labor Departments and other statistical bureaus show beyond all doubt that the hazards of unsafe walkway surfaces are most prolific, that a large proportion of the resultant casualties are serious and that they entail great expense."

In view of the presentation of these facts ten years ago is it any wonder that the Grim Reaper is still laughing and mirthful with the present records before him to consider? There must be something decidedly wrong. I will call attention to a few thoughts

which have occurred to me that will tend to point the way to overcome these hazards.

In the first place, in spite of the official records, there is not a general understanding or application of the seriousness of the hazards that are resulting in these enormous losses. One of the principal reasons why there is that lack of understanding is because generally we have not been classifying our casualties according to cause.

Many casualties having slipping and tripping as their promoting cause are frequently classified under other headings. Of thirty-five serious "electrical shock" casualties four were caused by slipping against live parts, and of these two were fatal. Of seventy-four "gear accidents" reported to one insurance company four were caused through slipping or falling into the gears. In the casualty report of a certain metropolitan railroad, submitted in competition for a safety record award, there were 127 passengers and eleven employees "injured in other than train accidents," according to their classifying, but investigation disclosed that fifty passengers, or over 36 per cent of the total accidents for a year on that road, met their injury through slipping and tripping on stairs, and another 16 per cent while getting on and off cars at stations.

An instance of this sort of inaccurate classifying came to my attention only at luncheon. One of the gentlemen employed by the State told me of an instance where the man in a small cobbler shop, there being only this one employee, had gotten up in a hurry and had slipped or stumbled on a defective piece of flooring and run an awl into his finger. He did not pay much attention to it and kept on working. In a few days blood-poisoning developed and at the present time he is in danger of losing his arm. That accident will be classified as blood-poisoning, but the actual cause was the defective flooring.

If all the casualties whose promoting cause is slipping and tripping were subtracted from the classes in which they are erroneously recorded and combined in a definite class of their own, as is now being done in some statistical bureaus, the resultant figures would still more emphasize the enormous number injured through the common cause of casualty—slipping and tripping.

An instance of the lack of appreciation of the seriousness of the unsafe walkway surface hazards and how to prevent them was shown in a report from a large industrial organization. This report included its list of accidents for six months. Shown in the list were a number of slipping accidents and the report was concluded with the statement: "Not one of these accidents was due to lack of protection by mechanical safeguards, but to careless practice on the part of the workers." It seems foolish to me to blame a slipping accident on carelessness of the injured individual. I am quite positive if the slipping hazards were removed the accidents would not occur.

There seems to be a very decided difference of opinion as to how to proceed in this type of accident prevention work. One group insists that by education we can eliminate the accidents. There is no question in my mind that educational work along safety lines does do a great deal of good, but you cannot make a big hurrah about your accident prevention work, having your meetings and your rallies, and then rely only on the psychological effect. You have to get out in the plant and eliminate the hazards if you are going to cut down your accidents from unsafe walkway surfaces.

Over ten years ago you were told: "Whether or not a workman is educated in safety practices and whether or not he plays safe, at least he will not be injured by a hazard removed. It is folly to educate or caution a person not to slip. It is the part of wisdom to remove or remedy the hazard." Therefore, since this problem has been thrust upon us so emphatically by the records of the past year, let us recognize the facts and without further delay act in accordance with the recommendations now so well known to overcome these particular hazards.

There have been sporadic efforts to combat slipping hazards, both public and industrial. Where continued they have been successful, but there has been no concerted movement. A review of what has been done and what can be done, pointing out the more common forms of these hazards and how they are prevented, will be helpful. In the frst place it must be appreciated that the slipping hazard gives no warning of its presence. The whirring belt or the noisy gear of themselves give warning, but not so with the slippery surface. Signs may be displayed such as "Watch Your Step," or "Be Careful," etc., but, so long as the hazard is permitted to remain, accidents from slipping will continue. Therefore, if progress in this direction is to be made, safe walkways must be provided.

Various forms of tripping hazards are quite productive of accidents and they are so closely allied with walkway surfaces that we may include them. Projecting switch-throws on railroad properties, in yards of industrial plants and on electric lines in the streets of large cities are a common tripping hazard. A box flush with the walkway surface and containing the lever overcomes this hazard. Manhole covers, coalhole covers, cellar entrance doors, etc., should be flush with the walkway surface. Projecting hinges should be avoided by countersinking or placing on the under side. Tools, implements and materials of all kinds should be properly racked or placed in such manner that they will not cause tripping. Gas and water valve cut-off boxes projecting above the surface of sidewalks constitute a common form of hazard which can be avoided. Occasionally the earth sinks and the surrounding surface should be leveled with the top of the box.

Unguarded sidewalk cellar entrances, areaways, excavations, etc., in or adjoining walkway places should be covered or guarded by railings or other means. In New York City all areaways, in the congested districts especially, have been covered with gratings.

Sidewalk elevator lifts with automatic doors opening with guards in place have successfully overcome the hazards of the open and unguarded pit.

In sidewalks the coalhole or manhole cover as ordinarily used constitutes one of the most prolific sources of sidewalk casualties. A single cover furnished nine casualties in a single day, reported to one casualty insurance company. Not only slipping and tripping are involved in connection with the ordinary coalhole covers, but numerous cases of falling into the hole while uncovered, or when the cover is removed for service, have been reported. The best modern practice now requires that coalhole covers shall be flush with the surface without projections or depressions, not convex, and with an anti-slip surface; and shall be hooded on the underside in such manner that when open the hole is entirely protected, leaving only sufficient space on the vertical face toward the curb for the insertion of the coal chute. Where old covers are in use rail-guards around them should be employed while coal is being unloaded. Such a guard should be as important a part of a coal wagon equipment as the shovel and chute, and should be made compulsory. If steel-bar construction is employed for such covers the distance between the bars should never be greater than one inch and they should be constructed to prevent spreading. Metal borders around vault lights are a vicious slipping hazard. In some cities a heavy coat of asphalt is placed on such a surface. Neither of these methods is entirely satisfactory. Strips of safety-thread with beveled edges may be applied to such a surface with good effect, but the modern way to prevent slipping on the cement surface in which glass is located is to float an abrasive grain into the cement when setting.

Ramps or inclines should provide high frictional resistance. As the angle with the horizontal increases the frictional resistance should be increased. When a granolithic finish is used an abrasive should be floated into the surface before it takes its initial set. The Transit Commission of New York City, for all such surfaces and for train platforms as well, is requiring about one pound of 8/16 aluminum oxide abrasive per square foot. In numerous places strips of safety-tread extending at right angles to the line of traffic and set in the cement flush with the surface are employed. well in almost every sort of walkway surface. Safety-treads, It is important, however, that there should be no incline or ramp at the head or foot of a run of stairs.

Ordinary walkway surfaces, such as corridors in public buildings., etc., are frequently laid in small tile, mosaic, marble, terrazzo, etc. Such materials should not be used for exterior sidewalks or in entrance corridors where people with wet or muddy shoes must traverse them. Some more suitable material having a higher frictional resistance should be employed at such locations. Terrazzo floors may now be obtained with a high degree of frictional resistance. A special product has been developed for use as a part

of the aggregate, which not only increases the durability of the floor, but does not tear out during the grinding and polishing processes.

Let me inject a word here to call your attention to the stairs in the main lobby of this hotel. You will find, if you rub your foot upon them, they possess a much higher degree of frictional resistance than the ordinary floors to which you have been accustomed. The reason is that they have been built in accordance with the modern principles of making them anti-slippery.

All such materials, however, are much less hazardous if properly cleansed. Soap powders should not be permitted, as soap is a combination of grease and caustic and its use results in a film of grease filling the pores and covering the surface. A little moisture makes it dangerously slippery. The remedy is to use cleansing materials of the detergent nature, in which there is no soap element.

In woodworking and flour or cereal plants, in rubber manufacturing plants where powdered soapstone is used extensively, and kindred other places, the slipping hazard is particularly troublesome. Sawdust, shavings and other materials polish the floors and there is sufficient of this material which cannot be exhausted in the processes to make the hazard of slipping particularly acute. On the floors around power-driven machinery and in danger zones in general, such as elevator floor landings, boiler and machine room floors, building entrances, etc., an effective anti-slip surface should be employed. Numerous forms are available. Paint or glue with sanded surface has not proven at all satisfactory. While rubber is desirable around high tension switchboards, it is not so desirable where there is oil or water. Prepared roofing papers are sometimes used, but they are lacking in durability and curl up at the edges, causing tripping hazards. Plates of abrasive metal or safety-tread may be used advantageously.

There is some type of walkway surface material available which will give not only requisite durability, but anti-slip quality as well in almost every sort of walkway surface. Safety-treads, rubber, cork, travertine, asphalt mastic, granolithic, wood and steel all have their proper uses where they are entirely satisfactory, but care and judgment must be used as to what particular material shall be employed for a given purpose.

Perhaps the most unsafe form of walkway surface is the stair. In designing stairways it is quite important that sufficient head room be obtained and the minimum distance or clearance measured from the top of tread on vertical line with face of riser to the soffit of the flight immediately above should be never less than seven feet. Doors or other entrances opening directly to stairs should be avoided. Landings large enough to provide standing room outside of space covered by swing of door, and glass panels in the doors when used at such locations, are requisite for safety. Single runs of stairs or ladders should not exceed eight feet in the vertical. Treads on stairs should be of sufficient strength to

bear the maximum number of people who can stand upon them and a safety factor of six should be used. The width of treads and height of riser must be constant for each run of stairs and the treads should be of sufficient width to allow ample space on each to place the whole length of the foot.

It is a very important point to have the tread widths and the riser heights the same for each step in a run. If there is one step that is a quarter of an inch "out" in the middle of that run you are going to have a number of accidents. I know of numerous cases where that has occurred and the people maintaining the stairs were in a quandary as to what caused the accident until such lack of constant rise dimension was discovered.

Treads should not exceed twelve inches in width, including nosing overhang, which should be from 7/8 inch to 1¼ inches. The nosing overhang is necessary to prevent the back of a shoe coming in contact with the riser and is particularly desirable in stairs used by women to prevent their skirts from being pinned between the heel and the riser. The angle of the stair should be between 30° and 36° and the best formula for determining riser height in inches is:

$$\frac{25 \text{ inches—treadwidth}}{2} = \text{riser height}$$

But it is in connection with the type of material used for the treads that the greatest hazards occur. Wooden treads call for regular inspection and careful repair. Safety treads applied over wooden treads protect them against wear when new and provide an easily replaceable insert if wear should be excessive. Concrete treads unquestionably should have safety tread inserts. The use of abrasive grain troweled into cement for this purpose has not proven satisfactory. The use of the safety tread in concrete steps is not only to prevent people from slipping, but to protect the nosing edge from chipping and to take the wear on an easily replaceable insert.

The question of stair-tread materials is so important that the laws of several States and cities contain provisions requiring that "The treads shall be so constructed and maintained that persons walking thereon will not slip."

But that provision is scarcely specific enough. What constitutes the material that is "so constructed and can be so maintained that a person walking thereon will not slip?" To cover these and other deficiencies in our present knowledge the American Engineering Standards Committee called a general Congress, at which there were sixty-three national organizations represented, and they voted unanimously that a national safety code for walkway surfaces should be developed.

As you saw in the film, the American Institute of Architects and the American Society of Safety Engineers were invited to act as joint sponsors to formulate that code. They organized a committee composed of forty-three representatives of all the different affected

organizations, including manufacturers or producers of walkway surface materials, as well as users, Governmental regulatory bodies, etc. That committee has been at work for nearly five years, during the course of which time there has been a two-year research conducted by the Bureau of Standards to determine how best to measure frictional resistance of walkway surface materials.

They devised ways of doing that and measured some 150 types of materials. With the information thus obtained and the collective knowledge of the members of the committee, the code has gradually assumed form, and I might say that it is now about complete. One of its essential features is the requiring of specified minimum frictional resistances for certain danger zones or hazardous locations in semi-public and public places. For instance, at elevator landings for a distance of twenty-four inches from the shaft the frictional resistance of the floor material used there must be higher than the floors elsewhere in the interior of a building, and floors for a distance of ten or fifteen feet from the exterior entrance in the lobby must possess a higher degree of frictional resistance than the balance of the floor in the interior of the building.

Stairs, both exterior and interior, ramps and other walkway surfaces are covered, and I am quite sure that architects and engineers, together with safety men and others responsible for safe condition of walkways, will find this code, soon to be promulgated, will be a decided help in combating this most vicious of hazards, one that is costing us more than any other single hazard in this country. I thank you. (Applause.)

CHAIRMAN CULLEN: We will now hear something on building construction by Mr. Elmer B. Tolsted, President, Fonda-Tolsted, Incorporated.

Mr. Tolsted! (Applause.)

SAFETY IN CONSTRUCTION ENGINEERING

By Elmer B. Tolsted, President of Fonda-Tolsted, Incorporated, Chicago, Ill.

MR. CHAIRMAN, LADIES AND GENTLEMEN: If you want to get the same safety in the building construction job as you get in the industrial job you must have the same safeguards. You must have the same protection on your stairways; you must have the same protection everywhere in building construction safety that you have in ordinary safety if you are going to get the same results.

I am inclined to take up the discussion right where Mr. Mowery left off. I agree with everything Mr. Mowery has said, excepting that I have carried it a little further. How do we know what is a good stairway? We get a wooden stairway and it wears out. Which tread of a stairway wears first? I am going to tell the fellow who does not know. The next to the bottom one wears first. Here is the stairway. I am walking toward it and start from some indefinite point and go to the stairway. I get close and I

may be a foot or two feet or eighteen inches back from the stairway and step up and put my foot over and down. I have learned one thing about that stairway. I have learned the height of the tread above the first tread. I have not learned anything at all about the distance back. So when I make my next step I raise my foot to the right height and slide it back and wear that step. Then when I make my third step upward I step almost accurately in place, because I have learned two things about that stairway. I have learned the height and the distance back and I put my foot almost accurately in place. So much for stairways at present. I am going back to the subject of stairways in a moment.

I have here 900-odd items for the safety engineer on a construction job to keep in mind. If I spent one minute on each of those subjects I would take fifteen hours of your time. The alternative is to take a small percentage of them and discuss them a little more thoroughly.

The safety construction job is fire prevention as well as accident prevention. You cannot divorce the two. Therefore we must consider, as we go along through this subject very rapidly and sketchily, fire prevention at the same time that we consider the prevention of accidents. Your safety engineer with 900 things to think of has got his hands very full. If we go to a construction job and find that the safety engineer is not very busy we can decide right away that that safety engineer does not know what he is doing, because if the safety engineer has 900 things to think of—and this is not a complete list by any means—and cannot spend his time in safety work and has other things to do or does a lot of loafing, etc., he is not onto his job and does not know what he is trying to do.

The last speaker spoke of falls. Therefore I am going to pass over them very briefly, because they have been so well covered. Suffice it to say that we religiously provide railings; we avoid overhanging planks; we avoid walk planks; we avoid knotty or weak planks and poor scaffolding; we do not ride on hoists or loads or slings. When I say we do not do that I mean we try not to do that. We try to get our men not to do it. Occasionally one slips. Occasionally one does the thing we do not want him to do, but most of the time they do not do it, and I say that 99 per cent of the time we get away with it as we want to do. Ninety-nine per cent of the time we find that it is possible to have things carried out as they should be, and perhaps one per cent of the time or less than one per cent of the time we fail to get things done as they should be.

We are constantly on the lookout for overloads on floats and scaffolds. We watch wire rope, wire cables. We watch the fastenings of the wire rope; we watch the rope itself. We do not let it go too far before we replace it.

Let me speak a little more about that 99 per cent and one per cent figure. Ordinarily in the safety work an inspector will go to a job and make his inspection thoroughly and carefully, and if

he works as hard as he can work all day long he will make seventy-five to 100 recommendations a day. Probably seventy-five recommendations is a good figure, if he considers what recommendations he is making and makes sure he does not make any recommendations that should not be made.

I have been on one particular job five different times and I have failed to make a single recommendation. All day long I failed to make a single one. Now, that is constructive work of a high calibre when a man who is in the habit of making seventy-five recommendations a day cannot make one. That is carrying it pretty far. That is beating the safety inspector out of his job.

We prefer stairs to ladders and we install stairways as early in the job as can be safely done. We do not like ladders, but if we must have ladders we see that such ladders are made by experienced men and that they are well made and frequently inspected so they do not get in condition where they shall be unfit for use.

Our automobiles cause accidents. In the inspection of several thousand automobiles I can say the practice was in the old days to find 52 per cent not in condition to be on the road. That condition has been changed of course and the percentage of automobiles not in condition to be on the road has been greatly decreased.

I want to say a few words about fire prevention. We are getting sheet metal construction buildings, sheet metal offices, sheet metal compressure houses, warehouses, etc. We are doing away with wooden buildings. Just as far as we can we replace them and in a year or so we will have no wooden buildings on the construction job other than a few. If we were putting up a wooden building the temporary buildings that would go in to put up the wooden building would be of better construction than the wooden building itself.

Heating appliances must be safe. We have no steam pipes in contact with woodwork, no chimneys in contact with wooden walls. We have no stoves that are on unprotected wooden floors. That has greatly reduced our fire hazard.

Many construction offices are so very hot or so very cold as to cause sickness in the winter time. We try to avoid that. We try to keep our construction offices in the various buildings in which maintenance work is done at the proper temperature—at the same temperature as this hotel, for example.

Electrical conditions are probably as well regarded in some of our construction jobs as you would find them in the ordinary industrial plant. When one can get electrical conditions on the construction job as well taken care of and wiring as good as in a manufacturing plant that is saying a lot for the construction superintendent and his crew.

Regarding the acetylene apparatus, we have a set of rules which must be lived up to. We train acetylene welders and nobody is allowed to use an acetylene outfit unless he has had training and passed the examinations showing him to be a trained acetylene welder. We provide an extinguisher on each acetylene outfit, so

if a fire is started by the welding outfit the man has his equipment handy and knows where to get it and put out the fire.

In a good many cases we provide fireproof tarpaulins. We are experimenting with asbestos blankets that can be thrown over electrical equipment or anything that is apt to catch fire and we thereby hope to prevent some of the fires that start in spite of our caution. More than that, we hold acetylene welders responsible for the fire they cause. Fire in buildings under construction are extremely dangerous, and we take no chances on starting fires if we can avoid it.

We of course have the usual and ordinary fire fighting equipment, such as extinguishers, fire hose, etc., and we know in advance where we are going to place a fire hose. We see the job coming along and watch it carefully and at the proper time put our fire hose in place to take care of fire possibilities that may occur.

Mr. Mowery spoke at some length on looking over plans for safety. We examine all plans of buildings to see that safe methods are used, to see what additional safe methods we can provide for the job, to see that safety movement is provided and we change those plans, to provide safe buildings, and to have the safety taken care of when the job is finished.

Of course we have safety committees. That subject has been so frequently discussed that I am not going to discuss it further. We have followed pretty well along the best paths we can find. We have foremen's meetings in addition to our safety meetings. We hold our foremen responsible for accidents that occur.

The very best thing that I can think of that we do on our jobs is to spread them out as much as possible, get started on the earliest job as soon as we can and have just as few men on the job at the same time as possible, thereby reducing the number of accidents that can occur to a smaller working force.

I was on a construction job (thank God, I did not have anything to do with it!) a few days ago and as fast as I could hear them a bolt dropped, a hot rivet dropped and a brake dropped. I just missed the brake. One had not got through rattling in its fall when the other was dropping. Two men were badly injured. When you have that kind of construction as against the kind where you cannot find the recommendation to make in a day's work, there must be a difference in the number of accidents.

The foreman is perhaps the most important part of a job. He, too, has been pretty thoroughly discussed. But if you can have a foreman who is capable of carrying out the recommendations of the rapid safety engineer, and if he is capable of getting the work done promptly, the safety engineer then has it all upon his own hands, and if he has accidents he and he alone is responsible.

What of that safety engineer? What should he be? He should be enough of an engineer to command the respect of all who work with him or over him or under him. He should be capable of computing the strength of parts affecting the safety of buildings and should look after the safety of the men; be capable of figuring

beams, columns, ropes, slings, compressor tanks, boilers and so forth. He should be capable of seeing the reclamation.

He should be a construction engineer enough to know in advance when a derrick must be "jumped."

He should be electrical engineer enough not only to know the difference between a volt and an ampere, but he should know enough to handle electrical problems.

He should be mechanical engineer enough to be able to tell whether an air compressor will be overloaded, and if so what to do about it.

He should be illuminating engineer enough to know that a foot candle needs safety shoes for fire protection.

He should be mining engineer enough to get into a hole and tell whether it is safe, and he should be transportation engineer enough to lay out a material handling system.

If he is all of this he is a fine safety engineer, but in addition to all of this he must be a diplomat as well!

I thank you! (Applause.)

CHAIRMAN CULLEN: The next paper is entitled "Falls in the Construction Industry" and is to be read by Mr. Glenn W. Cook. (Applause.)

FALLS IN THE CONSTRUCTION INDUSTRY

By Glenn W. Cook, Supervising Engineer, Travelers Insurance Company, Hartford, Conn.

MR. CHAIRMAN, LADIES AND GENTLEMEN: You have heard a number of statistics quoted today regarding falls. As an introduction to this subject regarding falls in the construction industry I would like to repeat a few of them.

The outstanding cause of industrial accidents in the State of New York is falls. Next to handling objects more accidents are due to falls than any other cause. Falls is the leading cause of deaths and permanent total disabilities. As the result of falls more compensation is paid, and more time is lost than for any other cause. There are about 18,000 accidents due to falls in the State of New York each year and this represents an increase of about 100 per cent in the last five years.

In the construction industry this is by far the most important accident cause. It represents about one-fourth of the accidents in the industry. There were about 5,500 people injured due to falls in this industry in this last year. There is a workman killed every other day in the State of New York in the construction industry from a fall.

One-fourth of all accidents in the construction industry are due to falls, while only one-eighth of all accidents in manufacturing and transportation are due to falls, indicating that the problem of falls is twice as important in the construction industry as in other industries.

Falls in this industry are classified as falls from elevation, falls on a level, falls into openings, and other or indefinite. The outstanding cause of course is falls from elevations. It represents the greatest number of accidents and the most severe class of accidents not only in this industry but in all industries. Falls from elevations are most always very serious accidents. Ladders and scaffolding represent the cause of most falls. There were 1,900 falls due to ladders and 1,350 accidents due to scaffolds in the construction industry this last year.

A study of the falls from scaffolding and staging develops the fact that there were 500 injured due to falls from scaffolding and staging that was defective, 300 injured due to the failure or breaking of staging or scaffolds, 100 were due to loose planks and 40 due to breaking of supports and tackle.

In considering the falls from ladders we find that 250 of them were caused by the ladder itself falling, and over 100 due to the ladder breaking. These are the minimum figures. Undoubtedly there were many more from defective equipment of this kind, but the reports are too vague to positively identify the cause.

The records on falls into openings and falls from elevations do not indicate whether or not any safeguards were provided at these locations. The probabilities are that most of them were falls which could have been prevented by the proper safeguarding.

Falls on the level are obviously falls due to tripping or slipping, or falls due to insecure footing. Off-hand we would not consider this class of falls serious but for the fact that about one in eight of them results in death, permanent total or permanent partial disability. Anyone who has observed the housekeeping on the average construction job can appreciate the reason for falls of this type.

There is only one conclusion which can be drawn from the statistics presented by the falls in the construction industry in this State. These accidents are due to defective equipment, lack of mechanical safeguards and lack of supervision.

There are probably contractors who do not know how to build safe scaffolds or safeguard their jobs. There are also probably contractors who are too penurious to provide good material and put good workmanship into scaffolding and ladders, and who will not provide safeguards because of the cost. By far the greatest number of contractors do know how to build safe scaffolds or ladders and at least know the minimum requirements for safeguards on building work. They also are as a rule willing to spend the money to provide these safe working places. The equipment is often built properly in the first place, but due to use or the act of some sub-contractor the scaffolding or ladders are weakened or the safeguards removed.

There are now available standards for safe practices in practically every branch of the construction industry. These standards have been prepared largely by the men engaged in the industry and have been tried out by them and accepted as workable

standards. An inspection of any number of buildings under construction will show that few of them are being built in conformity to the standards of safe practice in the construction industry. Scaffolds will be found built of inferior lumber with inadequate sizes and poor designs. Likewise defective ladders will be found and many safeguards missing.

A discussion with a contractor regarding the conditions on the job will almost always bring out the fact that he really wishes to have things properly built and properly safeguarded. What he lacks generally is a knowledge of how to go about it. He lacks organized control of the accident situation.

A contractor faced with the problem of building and keeping scaffolding safe asked that a set of rules be made up for him that he could post before each foreman and superintendent, with the idea that they should be carried out to the letter. I am going to read to you this list of ten simple rules which he now uses. I think you will agree that if they are carried out they will go a long way to solve the problem of scaffold accidents.

RULES FOR CONSTRUCTION OF SCAFFOLDS AND MAINTENANCE

1. All scaffolds shall be built of sound lumber, of selected structural grade, free from large knots and other imperfections.
2. All planks shall be at least 2″ x 9″ carefully selected and inspected, laid close together with an end lap of at least 12″.
3. The following minimum sizes of lumber shall be used: Uprights 4″ x 4″, ledgers 2″ x 6″, putlogs 2″ x 8″ and braces 1″ x 6″. Braces should extend from the foot of every third upright at an angle of 45 degrees in each direction.
4. Uprights shall be plumb, fixed at the bottom and resting upon solid foundations.
5. Scaffolds shall be at least 4′ wide between uprights, and provided with hand rails and toeboards.
6. Scaffolds shall be erected and taken down by experienced men only, and if erected by others, never used until carefully inspected.
7. All scaffolds shall be inspected frequently for structural defects, overload and damage from trucks, wagons or hoisting equipment.
8. All scaffolds shall be cleaned daily and all tools and buckets removed when workmen leave.
9. No one shall be allowed to remove timbers, cut away supports, or braces, without permission from the superintendent.
10. Means of access to scaffolds shall be provided by stairs or ladders and if ladders are used should be securely fastened.

I think you will agree that these rules are reasonable and not difficult to carry out. If every contractor in this State had a similar set of rules and insisted on their compliance we would not have to account for some thousand falls this last year due to defective scaffolding.

There are available similar safe practices for ladders, floor and wall openings and in fact for nearly all the safety problems of building construction.

The problem of preventing falls in the construction industry is not so much the problem of finding out how to prevent falls, because they already know how to prevent most of them. The falls

are primarily due to lack of proper safeguards, lack of inspection and lack of control.

The problem of falls in the construction industry will be largely solved when the contractor organizes his accident prevention as he organizes his other work; when he adopts and insists on carrying out standard safe practices; when he controls the acts of the sub-contractors and the employees under the sub-contractors, and when he holds his foremen and superintendents responsible for accidents caused by a failure on their part to maintain the equipment and carry on the work according to standard safe practices.

We have a saying in controlling accidents in the manufacturing industries that the two things necessary are executive participation in accident prevention and foremen's responsibility. I see no reason why we cannot say the same thing about the construction industry. The problem of falls in the construction industry would be solved if we had executive participation and foremen's responsibility, because they would bring with them standard safe practice and careful inspection.

I want to illustrate to you the attitude of an average contractor. A large contractor who has built a great number of big buildings was asked where a working floor should be kept and if it should be planked all the time. The first working floor of course was planked. When he moved up with the first set of columns to the second working floor he began to take up the planks on the first floor. The inspector said: "Wait a minute. You know the rule and you know the working floor should be planked."

"But that is the working floor."

"Yes, but it is not a working floor until it is planked. Leave this here until you get that floor planked."

"I have been erecting buildings in New York for twenty years and I never saw such a thing done. Is there any reason why it should be done?"

"Is there any reason why it should not be done?"

"It will cost more."

"Supposing it does, will you do it?"

"Yes, if you say so I will."

It is nothing but a lack of initiative. On the same job they were taking up a derrick. They were spreading it apart. They shoved a plank at the mass and one man started to shove it along. The mass turned suddenly and pulled him into a hole and he went down three floors and was killed. In discussing this with the contractor we said: "Couldn't you plank the floor around there?"

"No, because we have to roll the beams back and then roll them together again."

"Couldn't you put temporary planks in there?"

"Yes, but it has never been done."

"Is there any reason why it should not be done?"

"No."

"Will you do it?"

"Yes."

That is the attitude of the average contractor. One of the faults of the construction industry in safety work is the lack of initiative. A speaker this morning brought out the point that there should be more inspectors on the job. On some jobs we have an inspector every minute that the men are at work and on some jobs we have several inspectors. I do not think it is right to assume that inspectors are ever going to make a job safe. Inspecting a job is merely policing it. We hire policemen to take care of bad people; we do not need them to care for the good people. The same thing applies to the contractors. If they are on the job and doing the job right there is little work for the inspector.

Another remark this morning was about revising the New York code. It is time that it should be revised. It should be made more drastic. Fine! But if the present New York code is not enforced, which it is not, then what good will it do to revise the code? We would get no more safety out of it.

The contractors claim that on building work the concrete floormen are under the working floor, but you look at any number of buildings and see that the concrete men are sometimes five and six floors below, and probably never will catch up. The steel work will be finished long before the concrete men get up there.

I heard an interesting thing from one of the contracting men last night, while speaking of falling material. He said the carpenters sometimes cause the falling of materials. It is a habit with a lot of them to carry some nuts and bolts in their pockets. When anything is knocked down they throw them down and let them believe it is the steel men.

In concluding I have only one thing to say, and that is that on construction work the weak point is that the contractor does not organize his safety work before the job starts. He organizes his other work, he plans what he is going to put into the building and how, but he does not plan the safety work. If he would put the same thought and effort into planning safety work that he puts on the job we would not be here discussing 2,000 or 3,000 falls due to defective equipment. (Applause.)

CHAIRMAN CULLEN: I have been informed by the Chairman of the Program Committee that Mr. W. G. Wheeler, who was to lead the discussion at this session, is unable to be present. Therefore we will throw the meeting open for a general discussion.

DISCUSSION

C. H. ALMSTEAD (Patent Scaffolding Company, New York City): I should like to ask Mr. Cook what nature of construction the greatest number of accidents happen on, whether on power plants, factories, houses or business buildings? I am interested to know if he has any records or statistics on that.

MR. COOK: No, I have not.

MR. ALMSTEAD: On what phase of the construction do they occur? On the steel construction or during the brick work or perhaps the roofing?

MR. COOK: I do not know the answer to that. I do not know whether anybody has the answer to it. I hardly think he has.

MR. ALMSTEAD: I think the answer would be from scaffolding and ladders. I think that shows the greatest severity. Handling materials does not show the greatest severity.

THOMAS W. MCGIRR (Representing the Unions of Plumbers of Manhattan and The Bronx, New York City): Ladies and Gentlemen:—This is the first time I have had the honor and pleasure of addressing such a large body. From my experience in the building line I am going to tell you how things are.

I have had thirty years' experience as a plumber, three years representing the unions of plumbers as business agent, one year in the New York Building Trades' Compensation Service Bureau and just elected to another term of office. The conditions that exist in the way of safety for the workmen are deplorable. They have some thin pieces of flooring and thin railings around the holes. Instead of having planks two inches thick for covering holes or prospective holes they have about a seven-eighths-inch plank.

Some of the stairways have no protection. There are cases of that kind every day before the Compensation Bureau. You talk about your patent devices. God bless them! You see the bricklayer working on the building, with a two-inch scaffold floor on which he stands and one the same above and below him. The man supplying the brick and mortar goes along with his wheelbarrow. He does not understand the English language, and when he dumps the wheelbarrow some of the contents go on top of the plumber downstairs. When they go down to the Compensation Bureau he has to have an interpreter. And the boy who was born here in the United States, in New York City, has to wait in line for this man. He has to wait for the interpreters to get through.

My salary comes from the 3,700 men whom I represent. They sent me here and they know I am going to say a few words. I have listened to the papers on accidents. Surely we fall. I am liable to fall down here now. I have to watch my step. But sometimes there are nails that project up from the floor an inch and are left there. Men trip on them and fall. Sometimes the builders do not even supply planks. The plumber uses the plank of the bricklayer's scaffold because he does not get a plank to work on. They work on the plank until there is a fight and then they get off.

There was something said about the inspectors. I am not looking for an inspector's job, and I do not know of anybody in this room who is looking for one. The inspector should be on the

job; he should be a man who has had experience as a mechanic and knows what it is about and can see the situation there. Speaking of nuts and bolts being dropped, any man who drops a tool in the building does not go down to see if it is where the plumber is; nobody seems to own that tool. But an hour afterwards, when they hear that nobody is hurt, they will come along and say: "Hey, plumber, did you see a trowel around here anywhere?" He will never get that trowel.

Those are the conditions that exist today. That is the reason for the compensation cases. It is just one hurry after another. The previous gentleman read the ten specifications. If those were applied to every job in the City of New York we would have ideal working conditions. You know then what they would say: "We are going to raise your rent. Look at what we have done and what we've got." (Laughter).

I am going a little further. Take the rails. Where are you going to hoist them? There is no place to hoist them. They say: "If the boss comes and sees you doing that, he wants to know why you are doing the carpenter's work." All these things pertain to the condition of the building trade. All of these conditions are there and you do not know them until you have actually worked under them. (Applause.)

FRED GAA (Representing Brotherhood of Painters and Decorators No. 51, New York City): Mr. Chairman and Delegates:— The former speaker passed a remark that in sending inspectors to a job it would be like policing that job. That is the very thing we want. I was on two jobs in New York City. To be more specific, the one was on Lexington Avenue and Fifty-Sixth Street and the other on Fifty-Ninth Street and Madison Avenue. The two jobs were from twenty to twenty-eight stories high, with absolutely no light in the hall. You would have to take your matches out in the morning. I almost fell into an elevator shaft. I said: "Why don't you complain of this?" They said: "If anybody opens his mouth he gets discharged." We want a policeman on that job. If a contractor or a sub-contractor has to do his particular job on that building he suppplies his men with a bulb, or with a wire to connect up, and as soon as they get off the job they unscrew that bulb or wire and put it in their pockets and then you are in darkness and can break your neck when you come down.

I came here to this Congress and I am glad I came. I expected that we would have a little broader scope of discussion. What I find here is a discussion about falling. Did you ever hear anything about sanitation? Does not that belong to it, when we have the fumes and the gases and stuff that poison our people? Do we not have to discuss that important subject?

Every one of you is a citizen of the first magnitude because you are not only trying to preserve, but you are trying to eliminate. We laud the Red Cross movement because it amends human ills and evils, but we are far higher because we try to eliminate those evils.

I have been active in the safety movement for some time. The first time I got notice of the safety movement was when it was held in the Electric Exposition of the American Museum of Safety. I made it my business at that time to visit the institution and see the director of it.

I said: "I want you to give my men a lecture upon your museum."

He said: "My dear man, we are not equipped to do that."

I said: "Aren't you a safety museum? What are you dealing with?"

"We instruct the foremen."

"Are they going to save the foremen?" I asked. "I think they have something which should not be up on the second floor. If you want to save human life you should come down to the workingmen. They are the ones you want to save. You have something that is a great light and you do not want to put it under a hood. If you do not come down I am going to start a bigger movement than you have. The State of New York is rich enough and capable enough to run a safety museum for the benefit of the workers and not for the benefit of the foremen of some institutions."

The director told me at that time that they thought a great deal of the Labor Movement, but the laboring men were ungrateful. They did not pay any attention to it. I said maybe it was not properly presented to them. In a short time I became the general advisor of that institution and I got them down on the ground floor. We had a pretty good museum, although it was only a nucleus and there was an exhibition hall. You have seen that exhibit upstairs. That is elegant for a traveling show. It is an exhibit of the manufacturers selling their goods in a safety way. In the museum there is an exhibit for the safety and health of the worker. There is nothing to sell. Just instructs and illustrates.

You saw the excellent movies we had here today. But you do not see them anywhere else. It is not necessary to educate just the 600 men here; it is necessary to educate all the workingmen in the State of New York and the world.

CHARLES L HUTSON (Representing Ironworkers' Union No. 40, New York City): Mr. Chairman:—I heard the two previous gentlemen speak. One is a plumber and the other a painter, but the most important man in construction is the ironworker, in the beginning at least. I happen to be one of them—I do not know whether fortunately or unfortunately. I have been that for twenty-five years or more and in New York City.

The thing our first speaker said about the floor being constructed with the floor above and below, I have failed to see that. That would be one of the biggest remedies in cutting down the accidents in the construction game. I daresay that the accidents in construction work are far greater among the ironworkers than any other trade connected with building.

If that condition could be brought about without the need of inspectors I would agree with him, but in my experience I have never seen anybody do anything except what he had to do. The great trouble in the construction business is the sub-contractor. If the general contractor puts up a building and does all the work himself he does not have half the trouble as when there is a sub-contractor connected with it or nine or ten or a dozen or more of them on the job.

I have worked on almost all the big buildings in New York City from the municipal building all the way down to the present day, and the only building I know of that was in any way near the condition that the gentleman represented a few minutes ago was the court house, which was under the construction of one man and he cooperated with the safety engineers and with the labor organizations. He had two men going around and doing nothing but looking after the well holes and the crevices that might be there.

A few minutes ago the gentleman enumerated ten rules. He stated the necessary equipment to use on a scaffold. The only scaffold in the ten rules, I understood, consisted of lumber. The most important things on a building construction are lines and cables. There are more lines used in the construction of the work in regard to iron work than cables. There is no cable used only on the rail. All the riveting and other construction work is done by lines, which is the most important thing connected with our line of work.

The gentleman also made some remarks regarding testing equipment. If we had such conditions in New York City I am satisfied the line that I follow would be at least 50 per cent freer from accidents than now. There is where I do not agree with a previous speaker in regard to the inspector. If you have these conditions the local contractor may promise to do these things, if you have them in the law. That speaker stated he did not think it was necessary to increase the law when we have no law enforcement, as it would be no improvement. That is the trouble. We have plenty of law now, but this law is not in force and it will not be until somebody has the power to see that it is enforced.

When the inspector is put on the job to see that all the rules are complied with we will have an improvement of at least 50 per cent. I think he should take into consideration the scaffolding that is used by the ironworker. The ironworker is the first on and the last off the job. As it was said before, the plumber and the bricklayer may have a fight; when the ironworker leaves a building he takes a long breath and thinks he is safe from that one now. (Applause.)

WILLIAM N. KRAUSER (Wilson Foundry & Machine Company, Pontiac, Michigan): I have come a long way. This is one of the greatest safety conferences I have attended and I have attended quite a number. I am going to take a minute of your time.

I want to answer practically the last three gentlemen. I may be wrong, but I am trying to speak from experience. I believe the gentlemen have the wrong angle. We are talking about rules, regulations and enforcements. You took exception to police work. You are promoting it. You cannot put safety across without education. (Applause.) You have not an employer or a building contractor in the United States, or the world, who has any ambition to cause the untimely death of a fellow-employee or a human being. You tell him you must not do this, you must not do that. Have you told him why he should not do that? Gentlemen, safety work is 80 per cent education. Another thing, remember that accidents are not the by-product of industry and never will be. (Applause.)

PAUL KELM (Representing Carpenters' Union No. 1,164, Brooklyn): I want to mention that a big factor that really would be the biggest in putting this across is the moving picture screen. Pathé News could put it all over America. You would then educate not only the older people, but the little ones too. (Applause.)

H. A. MOORE (Representing Iron Workers' Union No. 361, Brooklyn): Brothers, you speak about educating the various crafts and trades in the building line. You should educate the sub-contractor not only to cover the top floor where the ironworker works, but to cover the floor below when the ironworker drops things down, which it is a physical impossibility for him not to do. He will not then hit anything. When he drops through the holes himself he will not fall, but land on his feet. You can educate all of them. For forty years I worked for all of them and I find the sub-contractor is the worst. (Applause.)

THOMAS J. CURTIS (Representing the Building and Allied Trades of Greater New York): The last speaker stated that the educational movement was the principal movement in safety. I agree with him. To demonstrate that, we have over ninety representatives here today from the City of New York who are engaged in the building trades. That shows we are becoming educated. We are discussing this education of safety in our organizations, and trying to educate the employer. It is a harder job than to educate the worker, because the average employer in New York pays no attention to safety, especially the sub-contractor. He has no interest other than to finish the job. The average sub-contractor will tell the employee he pays insurance and he should get all the compensation he can. This is the situation we are trying to overcome. We are trying to teach the employer that it is far better to keep the men on the job than injure or kill them.

One of the gentlemen here asked the question: "Where do most of the accidents happen—on office buildings?" My answer is "Yes." A large percentage of our accidents happen on high buildings. There is another peculiar situation shown by close observation of this entire matter of safety—that is, we have twice as many accidents when work is slack than when there is plenty of work.

Last week we had seventy-five accidents in the building lines recorded in our Compensation Service Bureau and this is the highest we have run in one week. It shows that work is slacking. Our only solution is that men take greater chances when work is slack than they do when work is plentiful, because if a job does not look safe, and there is plenty, they know where there is a job around the corner. And when it is slack they take greater chances and stay on the job. This shows that we need inspection. We may call it policing, but we need it just the same.

As the law is today, inspection is not worth much because we have called to the attention of the Department of Labor jobs where buildings were six stories high without any protection for the men—not even planks between the floors to protect the men working above from those working below in the concrete, thus causing many accidents. The Department informs us that this can only be enforced on the story where the erection is going on.

One employer said the other day: "If all the companies would get together and adopt rules so that we could compete with one another there would be an entirely different situation." Most employers accept these jobs regardless of safety. Here is where I agree with the previous speaker, who stated that if they would take the same precaution in safety as they do in the material they are going to put into the building we would reduce the accident rate. These are the conditions we have in New York at the present time.

The sub-contractor is the bone of contention. He has no interest and does not care how many men he maims or kills. It is claimed there is no employer who likes to see one of his men hurt. But when he constantly is permitting men to continue getting injured, does anybody mean to tell me that that employer is interested in his workmen when he allows this condition to exist? Many employers do not carry insurance, but continue employing men without protecting them.

There is not a single contractor or sub-contractor in the State who does not know that he has to have compensation to cover any accident. Yet, all you have to do is to go down to the Department of Labor and see the number of cases of employers in the building line carrying no insurance. What are we going to do with such employers? Do you not think we need force? I think we need twice as many police as we have to regulate conditions with that type of employer.

These are the conditions we are confronted with and we are aiming to improve these conditions every day. The thing is that we have to make rules and then enforce them, strenuously. One speaker said he had some 900 rules and it would take time, about fifteen hours, to tell us all about them. If he could condense them to two-and-a-half rules we might do something. The principal thing is to watch the conditions; the rules will enforce themselves.

On the construction jobs you see a sign half the side of a house. It says: "Nobody can work in this shaft over eight hours a day." That law is not complied with and you will find many are doing ten hours of work a day. These rules and regulations are all right; what we want is enforcement of them. The employers do not do the enforcing and if they do not we have to ask the State to do it, so therefore we have to have more inspectors.

The Safety Congress is one of the greatest educational movements we can have. Take these representatives going back to their organizations from this Congress. They are reaching 700,000 workers in the building lines. We bring back to them the message of the conditions that exist and the remedies offered for these conditions. We are educating our men and we know they need it. For instance, we know when they put pushers on each end of the building, the only thought of the employer is to complete his part of the job of the building quicker than the fellow next to him. Therefore we want cooperation.

The aim of Labor is to sit down with the safety inspector and the boss before the job is started, and let us sit at the round table and state our conditions before the job starts. (Applause.)

JAMES L. GERNON (Director, Bureau of Inspection, Department of Labor, New York City): The trend that this discussion has taken, I think, shows we ought to know some of the experience that the Department has gleaned from enforcement of the law and code rules. One of the speakers said we did not need a revision of the rules. These rules, or the sections of law on which the rules are based, were enacted at a time when a building was constructed entirely different than it is today. The sections of the law should be changed to begin with and the rules that were adopted a few years ago need to be revised.

The subject under discussion is falls. Falls in buildings are more serious than they are anywhere else. This is a big subject and there is a lot to it. The building business as far as safety goes is where the manufacturing business was thirty-five years ago. It is in a chaotic condition. They do not know how to run an industry. There are men who know how to erect a building, but they do not know how to conduct an industry properly, and the erection of a building is an important industry.

Take the question of erecting stairs. The rule requires that the stairs shall run up with the structure. They put in the stringers but they do not put in the treads for sometime later. When they have the stair treads in they are so littered with dirt and material one has to be an acrobat to walk down or walk up. Is it not reasonable to suppose that under a condition of that kind you will have falls? A man does not have to fall fourteen stories to be seriously injured. There are records of falls on levels that are just as serious as if they were to fall twenty stories.

The men working in the building industry realize they have to work under this condition and they are fearful of complaining

about the condition of the structure. If they do so the boss will probably get another man. I am a great believer in education. Education will do a great deal. There are certain employers that you do not have to educate. The employers of this State and particularly in this industry generally are following the law and the code rules. If they did not we would have more trouble than we now have. When we issue 190,000 orders in a year and get that many compliances within that period it is the best evidence in the world, generally speaking, that they are complying.

There are problems in the building industry that do not exist in any other industry. They talk of the contractors. The greatest evil is the speculating builder. He is the fellow who will take all kinds of chances. He does not care how many he kills or maims providing he can erect the building cheaply. He knows nothing of construction. He is just a speculator. He buys a piece of property, has a loan and he may build a gigantic structure, all on speculation. If he finishes it he is lucky. He may have a profit. What happens to the workmen in the course of erection he does not care about. We have had to stop construction of that kind and tell them we would stop every hoist in the building unless they were safe. We cannot require them to clean up a floor in a building under construction; there is no power for that in the rules.

I will say that if this gathering will go into some of the buildings being erected in this State, and they are not all in New York City, because conditions are just as bad in other places, 50 per cent of them will fall down before they get to the top floor.

Take ladders for instance. We have destroyed so many ladders in this State that the ladder industry is good. Do not believe that that was not education. It did not set very good with the owners and the contractors, but it did protect the workmen in this State, even with the small force of inspectors that we have for this work. When they find a ladder that is not right, off it goes and they put an "unsafe" tag on it. If anyone uses it with that tag on he is prosecuted. We do not get all the unsafe ladders. Ladders have a short life. You can build the best type of ladder and it does not last long. The very nature of the business means that material wears out fast.

There are good employers in the building industry and there are as many bad employers as anywhere else. There is also considerable inexperience. Let me leave this thought with you, that if the people who are constructing buildings in the State of New York will furnish the proper equipment for employees to use they will save more money than will pay the cost of insurance—and they are all complaining enough about that cost. If they furnish the proper equipment for people to work with it will more than pay in additional work that can be done. There is no question about that. If you do not believe it go to most any building in any city and see what I mean.

The law and code rules do not begin to grasp this problem, if we are going to eliminate falls alone, which is only a part of it.

One of the delegates tried to bring out something that I do not think this gathering fully understood, when he spoke of what they had to work with. Do you know that good contractors, successful building men, who know the business as well as anybody can know it, do not furnish the equipment to a plumber or an electrician or other mechanics that go on the job? They have to do the job, they must produce, and when at the end of the day they have not accomplished a day's work the employers find fault with them. What does the man do? He steals the enclosures at the floor openings to make a scaffold so he can reach the ceiling if he has to do work that goes that high. You can find plumbers and others using the guards of floor openings for a working scaffold.

Here is another thing that happens. We have seen some of the finest scaffolds that could be built; they were in complete compliance with the code rules as to size of material used, but not properly secured to the buildings, and they fell off because they were not properly fastened to the structures. If you knew the number of men using scaffolds hanging on the sides of buildings held by nails your hair would curl. If you knew the number of men in the industry who drive the nails improperly, unsafely, and then expect the scaffold to carry them, you would be amazed.

One of the greatest battles we have had in the enforcement of these codes is to insist that the ordinary scaffold bracket used on a small dwelling structure should be lag screwed or be bolted right through the studding. Just realize this! It is not on the structures of great size where all the accidents are caused. They are falling off small buildings. Much depends on the type and construction of scaffolds. I read the account of every death from an industrial accident that appears in the newspapers in the State. They come to my desk eventually. If men would not work on improperly built scaffolds and take chances it would decrease the accidents. It is the attitude of some builders that they have paid for the insurance and let the man take the risk.

That does not apply to all employers or to all contractors, and it would be unfair to leave that impression, but it does apply to a larger percentage in construction work than in any other line. (Applause.)

A. AMRAM (Hamlin & Co., New York City): I would like to refer to the remarks made by the gentleman from Pontiac. He said a great deal about safety education and he was requested subsequently to give some definition as to what he meant and replied that one of the features in safety education is to discover the machinery hazard if there is any and to protect the hazard and keep the hazard eliminated. I think we all know that those points he mentioned are the fundamental principles of accident prevention. That does not give a definition of safety education. What we would like to know is a more explicit definition as to what he meant by education. We all know the principles of accident prevention.

LOUIS ODENWALD (The Fleischmann Company, Peekskill, N. Y.): If the gentleman would get in touch with the National Safety Council he can get all the information regarding safety education that he wants.

GLENN W. COOK: I think I have left the wrong impression on two points. One is the subject of inspectors. The impression I seemed to give was that I did not believe in inspectors. I happen to have been an inspector for a long time and now have seventy of them working for me. What I tried to say was that by multiplying the inspectors on the job you are not going to solve the fundamental cause of accidents. You have to get to the man who is controlling the situation, who is making the money to do the job, and who is the man who can provide the safeguards for the work and see that these things are done. That is the contractor or the sub-contractor. We know that inspectors can help. The other is the changing of the New York rules. I agree that the code should be brought down to date. The only remarks I made in that connection were that we would not do much to enforce the new rules if we had not enforced the old ones.

MR. CURTIS: I would like to ask the speaker a question. Where have you found that the greatest number of accidents have happened—with the sub-contractor?

MR. COOK: When you are on a building job and you have a contractor and sub-contractor on there it does not make any difference whether it is an employee of the contractor or the sub-contractor who is hurt. The contractor may supply the safeguards and the sub-contractor may do something which will take away the safeguard. It may have been taken away about five minutes before the accident, and then how are you going to tell who is responsible?

Regarding the other question of where the accidents occur. We have been discussing big buildings and high office buildings. I want to say that the ordinary frame dwelling, constructed mostly by carpenters, gets its full share of accidents, and also serious accidents, in New York State and in all States. If you want to find some place where no safety work is done at all it will be on the frame dwelling, where you have a small contractor.

MR. CURTIS: Do you not believe that we should have a law controlling the small building as well as the large building?

MR. COOK: One is as great an offender as the other.

J. M. WAYLER (Representing Carpenters' Union No. 2,236, New York City): I have been listening to the previous speakers. I agree with the speaker down the line. The only way to get anywhere in New York City, where I am from, is to get around the table and have this threshed out before going into the building. Today conditions are different, and it is not how well you can erect a building but how quickly. On some buildings they have

from even thirty-eight to forty-eight sub-contractors. They go out and take the job, the cheapest they can possibly bid, and the builder gives it to the lowest bidder. And then they hire the plumbers, the painters and the carpenters.

Then the condition you have is that the bricklayer gets on the job and he buys some planks. The sub-contractor figures the job so low that he must get only seven-eighth stuff. If a plumber wants to run up some lines he steals a plank from the bricklayer. If the carpenter has a protection around a well hole and he wants to make a few lockers or different things he rips the scaffold from the protection work.

The way I look at it is to have the sub-contractor investigated as to his standing and issue the policy to him then. Not give it to a fellow who can hire two or three men and call himself a contractor. He does not care about how many lives are gone. He wants to get the policy and he pays the premium on it and that is all there is to it. The insurance company today is losing money by giving policies to the little fellows. The little fellow should be investigated before he gets the policy and goes on the job. (Applause.)

EDWARD BURMAN (Wolff Industrial Service, Inc., New York City): I would like to ask a question of the previous speaker. He stated he knows of carpenters going around with bolts and nuts in their pockets and getting ready for accidents. I want to know if the speaker wants to leave that impression with this audience?

MR. COOK: I said that has been done. I will not say all carpenters are doing that.

MR. BURMAN: I do not believe it has been done.

MR. GLASS (Representing Carpenters' Union No. 1,164, Brooklyn): I wish this man would explain where he saw a carpenter carrying nuts and bolts in his pocket. I am a carpenter and I have worked at that trade for the last sixteen years. I do not want anybody to pass that kind of a remark about me.

MR. COOK: Do you guarantee that there is no carpenter doing that?

MR. GLASS: Yes.

MR. COOK: My information must be wrong then.

MR. GAA: It was said that education was the keynote of the movement of safety and sanitation. I think I have the solution of this. I visited the museums of safety at Munich, Dresden, Saxony and Berlin, in Germany, and one at Amsterdam, in Holland. I found that each one contained several large rooms with exhibits of every description and models of the results of unsanitary and unhealthful and hazardous conditions in industry. They

are the greatest education. Because when you see the result of the acid on the skin of the man it makes a deeper impression than a description.

Those museums have large auditoriums where employers and employees are taught and educated in industrial hygiene and safety. They have a monthly magazine and they have posters like this in each. [Displaying.] Those are hung out in the various labor centers, in Courts of Compensation and wherever workingmen and employers meet. Each one carries its message.

We in New York City have not anything of that kind. We have a little showroom in East Twenty-Eighth Street, called the Safety Museum. It is a room six feet by twenty—an ordinary room of a tenement house dwelling. We are not listed among the places of interest. We are ashamed at the present time to point it out. Why do we not mention that? It should be in the papers. I do not blame the Labor Department for it and I do not blame anybody but ourselves. The State would give it to us if pressure were brought to bear. This is the richest State in the world. It is the biggest manufacturing State. They have four to six museums in every other country and we should have at least one in New York City devoted to this movement. We should ask the State for a sufficient appropriation to get that. When you have that you can proceed with your education and your solution of this question will come. That is what I wanted to bring out. (Applause.)

CHAIRMAN CULLEN: In conclusion I want to thank you for your attendance at this session and the interest you have shown.

It has been very helpful and I am sure we will all profit, not alone by the very valuable information conveyed in the papers, but by the discussions as well.

The session adjourned at 4:45 o'clock.

TUESDAY, NOVEMBER 29

EVENING SESSION

General subject: "Teaching Safety to Workers."

The session convened at 8:15 o'clock, William J. Guilbert, Manager, Safety Bureau, Chamber of Commerce, Buffalo, presiding.

CHAIRMAN GUILBERT: Ladies and Gentlemen:—I just do not know what to say. I never saw so many people at one time in my life. I feel very much like the clergyman; when he saw a large gathering of this kind he immediately wanted to take up a collection. (Laughter.) I think all I can say is that it is wonderful to see a gathering of such a crowd as this here tonight, who are here to attend a safety meeting.

If each and every one of you would take back to your individual plants one thought which you might receive here it seems to me that a wonderful seed would be planted for the cause of safety. I feel as though I want to congratulate every one of you that is here for the splendid spirit that you have shown in coming out.

I want to especially congratulate the ladies. I love the ladies; that is the reason I am still a bachelor. (Laughter.) But, ladies, it seems to me that you play a wonderful part in safety. We all know that "the hand that rocks the cradle rules the world." It has been said that the hand that wields the rolling pin rules the world, but I want to say again that I believe that you can be one of the staunchest supporters in the cause of safety, and I extend to you ladies a most hearty welcome here tonight.

As you know, being conducted this week in this hotel is the Eleventh Annual Industrial Safety Congress of the Department of Labor of the State of New York. This meeting tonight, in connection with that Congress, is one of ten which the Safety Bureau of the Chamber of Commerce is conducting this fall. I want to ask all those men and ladies who have registered for the industrial course, the meetings of which are being held at Hutchins School, to please stand for a moment. [They arose amid applause.]

I understand there is quite a delegation here tonight from the Washburn Crosby Company, whose motto, as you know, is "Eventually, why not now?" But it seems it is "Now." May I ask the employees of the Washburn Crosby Company to please stand? [They arose and were applauded.]

Folks, there is where the good bread comes from.

I want to extend a hearty welcome to those who are here tonight from Niagara Falls, and I would like at this time to have the Niagara Falls delegation please arise. [They arose with a round of applause.]

The Niagara Falls delegates then sang a song, which was a parody on "Pack Up Your Troubles." The selection was entitled "Safety Song." (Applause.)

CHAIRMAN GUILBERT: While this is an Industrial Safety Congress, may I just give you a few figures? During the first ten months in the City of Buffalo this year there have been 308 fatalities—308 lives sacrificed in the City of Buffalo, of which 238 were adults and seventy were children.

There is just one other figure. Of that total number ninety-nine were killed by automobiles. Last month (the month of October) in the City of Buffalo fifteen people were killed by automobiles.

To those who drive automobiles I plead for safer driving, and to those of you who do not drive automobiles, but are among the majority known as pedestrians, I plead with you for a little closer cooperation with the motorist.

It gives me a great deal of pleasure at this time to introduce to you a gentleman who is responsible for this Safety Congress, the man in charge of the Department of Labor of the State of New York, Hon. James A. Hamilton. (Applause.)

PRESIDENT HAMILTON: Friend Bill, I am truly amazed at this wonderful gathering. But then Bill pulls off so many things that are worth while that I cease to be amazed. I am simply expectant, and when he told me this morning that I could expect to see a sea of faces here tonight I did not tell him I was from Missouri, because I felt, "Well, Bill knows how to deliver," and he surely has. And I believe there is a great reason for rejoicing on everyone's part for this particular demonstration. (Applause.)

In the first place, there is need for it. During the period of twelve months (as stated in my opening address, and which I am going to repeat) we had in industrial life in our State accidents to the number of 518,297. There is not a business today in the entire State, in the year gone by, but what there were at least 1,500 men women and children injured while on the job, and during the month of October, just passed, there were 169 men, four women and three children, or a total of 176, who were killed in the course of their employment in New York State. Why, if we heard such figures, such reports, nine and ten years ago from the World War front, across the great Atlantic, we would have looked upon them as terrible, but here in the days of peace we have this tremendous industrial toll, and I believe that you folks and the rest of the people of our great State do not want such a thing to continue.

While we have a wonderful Compensation Law in our State, which is looked upon as the best in the country and the best in the world, and while it gives help to those who are in need as the result of an industrial accident, nevertheless we are all firmly convinced that the only cure for this terrible condition is accident prevention. And now you folks, by carrying the message and

the lesson of accident prevention, can start rolling a great ball of protection that will sweep all over the State, and this is a good part of the State to start that going. Very frequently we speak of things starting from Buffalo and going way out to the Point of Long Island, and this is now an opportune time for you to start the great safety ball rolling so that we will all be interested in protecting the life of someone. And each one of us in our journey through life, if we can feel that we have done something to preserve the life of another, if we can save the arm or the limb or the eye of some fellow-workman, we are doing something that is well worth while, because we are told that he that loses his life shall find it, and anyone that makes a sacrifice in any way for the preservation of the life of another is doing something that will give him joy beyond measure.

So it is not only from the personal viewpoint of yourselves, but following out the Divine command of loving your neighbor as yourself and serving others that I appeal to you to enlist in this great cause and see if we cannot accomplish the result of decreasing the number of accidents.

I am glad indeed to bring to you from our Capital City at Albany the greetings of the Government of this great State, and enjoin upon you to follow its motto of "Excelsior," and lead the way in this great movement, because the entire State is expected to lead the way in everything that relates to business advancement in this country and in the world. Just the same as all the nations of the world are crying across the Atlantic for us to measure up to the responsibilities of world leadership, and as they rely upon us so the workers of America are the hope and reliance of our country. Oh, measure up to that responsibility so that we can be proud of an effort and of that great and glorious title of citizen of this great country! (Applause.)

CHAIRMAN GUILBERT: There is another gentleman whom I deem it a privilege to introduce to you, Mr. Walter G. King, who last year was President of the National Safety Council.

Mr. King! (Applause.)

WALTER G. KING (American Optical Company, Buffalo): Mr. Chairman, Ladies and Gentlemen:—It is certainly a wonderful pleasure and privilege to be at this gorgeous meeting. I have never seen anything like it. Mr. Chairman, I want to congratulate you from my whole heart on putting across such a wonderful meeting.

It was only a few years ago that the National Safety Council met here and delegates came from all parts of the United States, but we were unable to fill this room. Now we are in Buffalo and the people out in the hall cannot begin to get in. I presume there are 300 or 400 people who cannot get in.

What does this all mean? In October in Chicago we had between 5,000 and 6,000 men who got together for the safety work.

They met in the Soldiers' Stadium and it was filled. There were 80,000 people there. A half holiday was declared for the children. It was a magnificent demonstration. In Ohio last month 1,600 got together. Here we are tonight with 1,500 or 1,800 people. What is the significance of these wonderful meetings?

Friends, safety means happiness and health. What else is there on earth to strive for? I have been in this work for eighteen years, and it grows on me every day, and to be here with you tonight and register among this group is a great privilege.

As the Chairman said tonight, just think what it means for all of us to take home to the group that we know. Each one of us has someone to carry this message of safety to. It is the most appealing work in the world, and when you get this safety under your skin it is a part of your religion. You cannot help giving it out, and the more you give the more you have left. That is a wonderful thing about safety.

I thank you very much, my friends, for giving me this opportunity to come and speak to you. I wish you the best luck in the world. (Applause.)

CHAIRMAN GUILBERT: Mr. Hamilton and Mr. King, I want to thank you very, very kindly for being here tonight and giving us your few remarks.

At this time I want to express my thanks to several safety men of the different plants in Buffalo for their assistance in the work connected with this Congress—that is, the work that we have to do in Buffalo. I want to mention: Mr. H. M. Kensey of the American Brass Co., Mr. Doran of Pratt & Letchworth Co., Mr. Allen of M. Wile Co., Mr. Peake of the American Radiator Co., Mr. Brown of Wickwire Spencer Co., Mr. W. E. Armstrong of the Pullman Co., Mr. M. J. Huber of the Buffalo Forge Co. and Mr. J. C. MacLagan of the J. H. Williams Co. And if I have forgotten some names, and I know I have (I do not want to take the time to enumerate them all), but, gentlemen, I want to thank you from the bottom of my heart for the valuable assistance you have given me.

We are going to present to you a playlet entitled "Selling Safety." The scene should represent any safety engineer's office in any industrial plant in any part of the country. There are three characters in this playlet—the Safety Engineer, played by William E. Armstrong, of the Pullman Company; the Safety Committeeman, played by Stanley Figler, of the Pullman Company; and the Careless Worker, played by Harry Reid, of the American Optical Company.

The playlet was presented and heartily applauded.

CHAIRMAN GUILBERT: I am sure that everyone has enjoyed this safety playlet, which has been both entertaining and educational. The man who took the part of the Careless Worker (J. Harry Reid) until about a year ago was the safety supervisor of the local

Pullman plant. The man who took the part of the Safety Engineer (Bill Armstrong) is now the safety supervisor at the Pullman plant, and the Safety Committeeman (Stanley Figler) also works at the same place.

I want to say this, that you can go into that plant any time of the day, any day in the year, and you will not find one of the Pullman employees without his safety goggles on, which proves that it can be done.

I want to thank these three gentlemen for their effort here tonight in putting across this little safety playlet.

No meeting of this kind would be complete without music, and we are fortunate in having with us tonight some more employees of the Pullman Company, who are going to sing for us—the Pullman Porters' Quartette. (Applause.)

[The Pullman Porters' Quartette sang a few songs, which were greeted with applause.]

Again we are indebted to the Pullman Company, and I want to thank you boys very, very much for coming up here tonight and singing those songs for us. If any of you folks are in the habit of traveling by train at night and are lying in your berths and the train is rolling along and you hear a little humming, I think you can depend on it, that it is one of these gentlemen practicing. (Laughter.)

If you have any trouble going to sleep, just ring for one of these kind-hearted men and he will come to you and sing you to sleep. (Laughter.)

I had my misgivings this past week in arranging this program. Married folks have their troubles, so I have been told, and I certainly had mine this week. I had a speaker scheduled for tonight. The beginning of this week I received a letter from him saying he was unable to be here. I sent a telegram to New York and in two hours received a wire in reply. I opened it and took out the telegram and found the word "Sorry." I called up Utica and was told that due to a previous engagement that gentleman was unable to be here. I called up Cleveland; I called New York on the telephone without result. I was very much down-hearted. I thought we were going to have, as we have, a wonderful gathering here tonight and we would not have any speaker, and yesterday we made up the program for tonight.

QUESTIONS PROPOUNDED IN THE "SCHOOL OF SAFETY"

Answered by J. Harry Reid, of the American Optical Company, Buffalo

CHAIRMAN GUILBERT: Ladies and Gentlemen:—I want you for a short while, if you will, to forget that you are men and women and to imagine that you are boys and girls in the "School of Safety." You folks who have attended the Safety Congress, not only this year but in the previous years, have heard some wonderful speakers, and we are going to have tonight an examination,

if you wish, or a quiz. This is going to be a class. We are all in school now, and before the examination we are going to have a quiz.

We spoke to a number of safety engineers and asked them to give us questions that we might use tonight in this quiz. We have ten questions, and I am going to call on one of the gentlemen to act as the star pupil of the class and answer each of these questions, and if time will permit, at the close of this, if any of you gentlemen or ladies have any questions that you would care to ask this gentleman he will be very happy to answer them, providing they are not personal.

You can go into any plant at any time, stop and talk to any one man and he will shoot at you a lot of questions on safety. So, as I said before, we went to the safety men from the local plants who are attending this Safety Congress and asked them to give us a number of questions that we could use tonight. We got so many that we could not use them all. We have picked out ten of them, and I am going to again call on Harry Reid to come out here and take the part, if you wish, of the star pupil of this class and answer for you each of these questions.

We have these questions down on paper, so that during the time that Harry is answering them for you, you can still have in mind what the question is.

The first question that we are going to ask him is: "What is safety?"

J. HARRY REID: Safety is an unselfish service rendered to humanity. No matter how we look at it, we never receive pay when we render a safe act. We do not look for your pay in the terms of money when we go into a plant and try to prevent accidents happening to our fellow-men. It means more than just a service; it means that safety is put over when each and every workman in the plant believes that it is possible to do it, feels his own responsibility, and they cooperate together in order to obtain the results you want. (Applause.)

CHAIRMAN GUILBERT: The next question is: "What is the cause of most accidents?"

MR. REID: Thoughtlessness! Very often people say that accidents are due to carelessness. That is wrong. We do care. I do not believe that there is a man in any industry but what cares just a little about his fellow-workman. Accidents can be traced back to the time men did not think.

It has often been illustrated by saying that if you should lay your hand on an anvil and hand another man a hammer and say, "Strike it!" he would not do it. Why? Because he had a chance to think, and he would think to himself, "What would be gained if I do?" But how many times in industry have accidents occurred when a workman will take a hammer, a sledge hammer, with a cracked or loose handle, and swing it, the head comes off and hits his partner! What is the cause? Was it because he did

not care? No; it was because he did not think. He did not think to look over those tools.

That is the way most accidents occur in industry. Men did not think.

I will venture to say that if you take 100 accidents and ask the men who were witnesses to the accidents if they know some way they could have been prevented, you could not find one case where they would not say to you, "Yes"—in this way or that way.

Now if that person would have thought first, that accident would not have happened. The thing that causes the most accidents in industry, on the highways, and in the home, or anywhere else, is thoughtlessness. (Applause.)

CHAIRMAN GUILBERT: One thing that we are greatly interested in today is the cost of anything that we want. When you buy something you think of the cost. But how many of us have ever stopped to think about the cost of accidents? "What do industrial accidents cost?" is the next question.

MR. REID: There is no one in this room who can come close to estimating what industrial accidents cost you. If you have listened at the meetings in the last day or so you have heard statistics and figures on what accidents have cost in dollars and cents. We know that somebody pays for every accident that happens. If the accident happens in a plant it is often said that the company pays. Yes, but the one to which the accident happens pays first.

All down the line—you may take anything you might name; for instance, if you would take a cotton dress, what should be the cost of that cotton dress? What is the cost? You know what that cost is. But when you take into consideration every concern that handled that dress, from the time it was the cotton until it went into the gins, to the railroads, and came on right up to the time it was woven, cut and made and delivered to you, somebody paid at every step, just a little bit was hung on, and possibly the dress that should have cost about one dollar cost eight dollars.

There are two costs that are added to an article—one for fire and one for accident. Sometimes they happen and sometimes they do not. That is a little on the cost of the accident from the financial side.

But there is no one who knows what an accident costs in pain or suffering but the one to whom the accident happens. Very often people are sensitive about a handicap. Very often the man with the leather hand or the man with the wooden leg tries to hide it. It is useless; the world can see it. You are just another one of those; but it costs not only in actual suffering at the time; it costs what you pay when you try to do anything, regardless of what it is. Perhaps you can do it, but you will do it with additional effort, because when you have your two arms and your two legs you do not have to put that additional effort into things.

Can you imagine any blind man trying to tell you what an accident was or what it cost? You cannot tell what any boy might

turn out to be if he had everything to work with. You do not know what these people that you see from time to time are going through, and I hope you never will. There is never a person who can realize this, unless it happens to him.

And it seems strange that in industry, when one man tries to tell the other to look out for himself, that the other fellow kind of resents it. He does, until the day he is carried into the first-aid room. Maybe the tears are coming down his cheeks and he says: "Why did I do it? Why did I take the chance?" And that is the time he begins to realize what the cost is.

On the other hand, the pleasures that are denied a person as the result of an accident cannot be estimated, and they certainly are worth something. A man who is a cripple never has the pleasure of starting at one end of the football field and going to the other end. No, if he is there he is in the stands. He will sit up there and say: "It was a good game and good work," but he does not get the kick out of it, and that is what counts.

When you come to estimate the cost, estimate it by saying, "I cannot afford to do it," and do not take the chance. (Applause.)

CHAIRMAN GUILBERT: The next question is one that has been a question for some time in many industries: "Should safety committeemen report careless men to their foremen?"

MR. REID: Yes, by all means. And I want to say in connection with that, that there are too many men in industry who have an idea that because a safety committeeman or a fellow-workman or a mechanic, the same as they are, goes in to the foreman, he is a stool pigeon; he is a knocker or he turns them in. Often they say: "Look out for him!" It is the round robin that never hits the man who is trying to do the right thing. In other words, that is where the gap comes in that misses those who try to prevent accidents.

But I want to say that any workman who is on a safety committee or any workman in any department in any plant should never hesitate for one moment to go in and report the fellow who will not listen to reason out on the job and who continually takes a chance. You are not a stool pigeon when you report him. You are not a "knocker;" you are his best friend and he does not know it. When the accident happens he knows it, but why should we wait until the accident happens? That same man who resents someone reporting him because he is a careless worker, if he came through the shop and saw a fellow who was hurt badly and could not get up would pick him up on his shoulders and take him to the first-aid room to try to get him help, but when you try to get him to look out for himself he thinks the accident will happen to the other fellow. Some day you will be the other fellow; and when you are the other fellow it is too late to have anyone report you. (Applause.)

CHAIRMAN GUILBERT: We have heard a great deal lately about a man's mental attitude. The next question is: "How does a man's mental attitude affect safety?"

MR. REID: His mental attitude does affect the safety in a plant. If a fellow is laboring under an illusion, if he thinks that John over there is getting 73 cents an hour, and he is getting only 60 cents an hour, that he is not going to do any more than he has to because he is worth as much as John, he has not the right attitude toward the company. He is the fellow who is thinking about that and he figures that when the management talks safety to him, that they have something behind their backs they are trying to get by with.

If a man has an idea that the foreman is picking on him, he figures, "Well, what do I care if the department record is shot?" and that is the way you hear him say it. He does not possess the right attitude, the right spirit. But when a fellow begins to realize that his job is the best job in the shop, that the company will give him an opportunity if he shows he can deliver the goods, if he puts forth an honest day's effort, if he tries to do what is right, will you find that fellow among those careless men? No, and I want to tell you folks that a man realizes how good his job is after he loses it. For instance, I recall a case in a plant where a man refused to wear his goggles. He had gone day after day without them and he made a statement to the rest of the gang that he would quit before he would wear them. He was a hazard the minute he thought that. He got away with it for a while and would not listen to reason.

One day I went in and talked to the manager about it. I said: "We have either got to lick him or he is going to lick us. He tells the fellows now that he will not wear his goggles, that he will quit first."

The manager in going through the plant stopped the foreman of that department and said: "Tomorrow morning that fellow wears his goggles, and it is up to you to see that he does."

When the whistle blew the next morning he was told to get on his goggles; it was the order from the boss. He did, and in about an hour or so he came in and quit. Why? Because the gang made him quit. When he got into the shop they said: "No, you won't wear your goggles! You will wear them the same as we will, whether you want them or not. There is a chance of an accident here. We will wear our goggles and you will wear yours." He couldn't stand it and quit.

About a week or so afterward he came back to the plant and wanted to see the manager. The manager sent for me and I was sitting in his office when he came in. He explained to him that he would like to get his job back.

The manager said: "Well, we are a little busy. Sit over there at one side. I have to look over this correspondence. Think of two good reasons why I should give you your job back." You

can imagine a fellow trying to think of one reason, when he walked off the job. He could not.

Finally the manager asked him what he had thought, and he said: "Well, I just guess I have got to work. I didn't realize what I did, until I got on the outside. I guess it is a pretty good place to work after all."

The manager said: "Come in in the morning."

When you have the right idea, when you think right toward the job and you feel good on the job all day, accidents do not happen. (Applause.)

CHAIRMAN GUILBERT: About four years ago I was connected with the American Car and Foundry Company and some men were stripping a box car down on the stripping track. They had practically completed the job and there were just the skeleton sides standing and the skeleton frame. These two men were in this car, and as the safety committeeman walked down through the stripping track he looked up at the car, and there are two rods, one at each end of the car, that go from one side of the car to the other, with nuts on each end.

The safety committeeman said as he passed by: "Do not forget to remove those nuts before you push the sides out."

The answer was: "All right."

A little later on the job of stripping the car was completed. There were just the posts at the end, at the sides and at the top, and one man inside on each side to push out the skeleton sides under the track. They had forgotten to remove the two nuts on each end.

One fellow, being stronger than the others, when they pushed the sides out pushed his side out and pulled the other side in on top of him. His skull was fractured. They brought him into the plant hospital on a stretcher and in about twenty minutes he was dead. It was my job to go to that fellow's home and tell his wife that she was a widow. There were five children—a widow and five children.

"Who pays when accidents happen?" is the next question.

MR. REID: Those who do not, deserve to pay. The answer to that question might be summed up in this manner: For every accident there is a court held, whether it is with visible judges or not, where every accident is passed on, and those who are doomed to pay do pay. It might be likened to the Court of Careless Accidents, where you have Judge Lost Time, Judge Misery, Judge Cripple and Judge Death.

THE COURT OF CARELESS ACCIDENTS

"In the Court of Careless Accidents
There is a line that reaches far,
Where the crippled and the maimed
Are brought before the bar.
The judges show no mercy,
Why should they? one will ask,
As with spirit now relentless,
They go about their task.

"The first is Judge Lost Time,
Who imposes a fine,
On the little ones you leave at home
While you are in this line.
The sand in his hour-glass passes
Slowly, grain by grain,
And the home once bright is shadowed,
Till you return again.

"The second is Judge Misery,
Stern and cruel at heart,
Who will break down your alibis
And condemn you from the start,
Because he knows that careless men
Will always be the same,
As long as they can pass the buck,
And on others shift the blame.

"The third is Judge Cripple,
Who offers a wooden leg,
A leather hand or a blind man's cup,
And tells you to go and beg.
He pictures you on the corner,
Selling pencils day after day,
And you will admit that the judge is right,
When he says the safest way pays.

"The last is Judge Death;
Your troubles are over, that's true,
For he has a place in a graveyard
All reserved for you.
But what of the loved ones left behind,
With faces now drawn and sad?
It's a story old that has often been told,
The tale of a careless Dad."

CHAIRMAN GUILBERT: This question has been propounded: "Why does a man take a chance?"

MR. REID: Because a chance is the easiest thing to take. There is no question about it. To do a thing in the right way takes a little effort, but to do it wrong and take the chance, that is easy.

Why will a fellow take a chance? That is the question. Why will he do it when day after day in going through a shop he sees the bulletin boards showing what it means to take the chance, no matter if the chance is only with a little cut.

Let us think just a moment what that means—a little scratch on the hand. What is the first thing a fellow does in the shop when he is taking a chance? He looks at it, sucks it a little bit, and shines

it up on his overalls. He looks at it again, and if it does not bleed too much, it does not amount to anything; he will take the chance.

You can take a chance thousands and thousands of times and never remember the number of times you have taken that chance, but when this chance is against you the infection sets in and a man walks up and down the corridor of the hospital at night because he cannot lie still, and he is holding his arm in the air. He is paying for the chance he took, and there is no question about it.

I say, take a chance! That is the right thing to do when the chance you take is worth something. For instance, if you should be passing along a dock and see someone out there in the water who cannot swim, and you can take a chance and go after him and bring him out, it is worth while.

But why take a chance in the same water, on the same dock, to climb way up on the side of a pole and take a dive and flipflop and turn around, when over at one side it says: "Shallow; do not dive here." The chance you take because you are showing off to the gang at one side is not worth it. Take the chance every time if it is worth something, and if it is not do not have anything to do with it, and you will be a lot better off and find that safety does pay. (Applause.)

CHAIRMAN GUILBERT: "Why do workmen object to wearing safety goggles?"

MR. REID: They do; there is no question about that. It seems to be very difficult to get a man to wear goggles, to break down his alibis, break down his arguments. Very often a man has a right to object. They are not the prettiest things in the world. They are not the lightest thing in the world, and they are not the most comfortable. But that is no reason why he should not wear them. He should wear them for just one reason, and that is to protect his eyes.

The fellow who is working on a hazardous job in a plant and wears his goggles only when he thinks that it is necessary to, guesses when the accident is going to happen, and there is no man in any plant so intelligent that he can guess that. (Applause.)

CHAIRMAN GUILBERT: "Do accidents happen when they occur or do they occur before they happen?"

MR. REID: I think that is a trick question. But there is a lot to it. There is enough in that question to give a safety talk for an hour, and you would not half cover it. Do accidents happen when they occur?

We might illustrate that in this way: A man is working over here in a plant and comes home at night and finds his little boy is sick. He has been worrying about it; the child is getting worse. They get a doctor and the doctor is greatly concerned. The man sits up half the night with the little one. Finally his wife takes her turn and he goes to work. All day long and the next day he is continually thinking about the child. He goes home that night and

puts in another sleepless night, and the following day he goes back on the job. His mind is on his work and on his home; it is on his home part of the time and part of the time it is on his work.

He is doing a piece of work in a machine shop, for instance. He is turning an axle. He uses a little block to fit it properly into the machine. He is just going to set this and he happens to think: "I wonder how things are at home?" and he does not put the block over quite far enough. He does not put his hand on the top of the axle to put it in place, because he is trying to do that automatically. He is thinking about home. He puts his hand underneath, the block slips, and down comes the axle and drives the big chips through his hand. Did the accident happen then? No, the accident happened at home. It just occurred then. It never would have happened if his mind had been on his work. It happened yesterday and it took that long before it occurred.

On the other hand, if a fellow is working at home on Saturday afternoon and Sunday repairing the Ford, and has taken out the rear end and fixed it up with new gears, and jacked it up, and is just going to release it, and gets hold of the side of the jack and somehow it slips—maybe the ground is soft underneath. The jack slips and pinches his finger between the axle and the jack; he looks at it, wraps it up and finishes the job.

The next morning he is in the plant, and he thinks: "I would be a fool if I didn't go in and report that accident now. I will wait a reasonable length of time and then I will go. He waits until 9 or 10 o'clock and the nurse bawls him out because he has delayed so long. He makes out a report and tells her the accident happened in the plant. Why? That man is a cheat and there is no question about it. He did that just to get compensation.

Did the accident happen then, or did it occur? Well I will let you think it over. (Applause.)

CHAIRMAN GUILBERT: This is the last question, folks: "Why is safety given so much consideration today?"

MR. REID: Because today we realize what accidents mean, what they cost and that they can be prevented. When we take into consideration what the National Safety Council is doing, the tremendous amount of money that is being spent to carry on this safety education throughout the country, we begin to realize, after attending such meetings as we have had here, the value of safety and to know a little bit about what our State Department of Labor is doing and the efforts that are being put forth and the amount of money involved.

When you realize how much industry is paying year after year to sell the idea of safety to you, you begin to realize that you are paying for it just the same as industry or anybody else. We have awakened to the fact that by cooperating, getting together, accidents can be reduced. What do they care if the frequency goes up, as long as the severity goes down, because that is what you pay for?

People today are beginning to know that by a little work and a little effort these accidents can be reduced. They are thinking; they are cooperating or this group would not be together tonight. That is why we are interested. (Applause.)

CHAIRMAN GUILBERT: Harry, I want to thank you very, very much for the splendid effort you have put forth tonight to make this meeting a success, and on behalf of everybody present tonight I extend to you our sincere thanks.

A MEMBER: I suggest that a rising vote of thanks be given to Mr. Reid.

The audience arose and applauded.

CHAIRMAN GUILBERT: We have tried to present to you tonight a new thought in safety, and if we have given you one thought to take home with you to apply in whatever plant with which you might be connected we feel that our time here tonight has been very well spent. I thank you very kindly for coming out. (Applause.)

The session adjourned at 10 o'clock.

WEDNESDAY, NOVEMBER 30

MORNING SESSION

General Subject: "Handling Objects and Falling Objects."

The meeting convened at 10:20 o'clock, President Hamilton presiding.

PRESIDENT HAMILTON: After the wonderful meeting we had last night it certainly is agreeable to find so many of you up and at it again this morning. We have a splendid program right through tomorrow afternoon. As the presiding officer this morning we have another member of the Industrial Board, a gentleman who has been interested in State service for many, many years. He was formerly the Conservation Commissioner of our great State and for a number of years Industrial Referee in the Department of Labor, and just this last spring was appointed by Governor Smith, and his appointment confirmed by the State Senate, as a Member of the Industrial Board.

It is a matter of great pleasure and privilege to me to introduce to you the Chairman, Hon. James S. Whipple. (Applause.)

CHAIRMAN WHIPPLE: My Friends:—Just why Commissioner Hamilton thought it wise for me to act as Chairman of any one of these meetings I really do not know. Probably he could have selected no one who would have known as little about safety devices for the protection of employees, operatives, and it has always seemed to me that someone ought to preside at a meeting who knows all about the subjects to be discussed. I am frank to admit I do not.

Every human being has some general knowledge of course of the improved conditions for workingmen and women in this State. But not so many have technical knowledge of it. To my mind there is no greater work than this effort that is being made, in all lines, and in all respects, to make it safe for people who have to engage in industrial business.

I have been wondering, since this Congress started, what the percentage is of philanthropy back of this and what the percentage of financial gain may be. I am not attempting to solve that, but I hope the time has come when every employer in this country, in addition to wanting to save expenses because of injury and economies, does his level best to make things safe for the employee. In other words, I hope there is a more generous, human sympathy and care than there is a mere thought of dollars and cents.

I can see how in the beginning one had to appeal to the Department people interested in these subjects and had to appeal to the employer upon the grounds that there would be a saving if lives

were saved. It is a matter of evolution. I do not know but what I ought to give you a little picture of the distant past.

I do not want to seem too old, but more than sixty years ago I was employed as a laborer. I have been looking at the exhibits and I was greatly interested. Nobody knew me and I walked around among them and looked them all over. I reverted back in memory to the conditions that existed when I was a small chap and had to work. In those days nobody ever knew or had heard of any safety devices to protect employees anywhere in labor, as far as I know.

I was born—and it is unusual to hear a man say that— in a log house. It was in the Allegheny River section in the lumber works. Being deprived very early of a father we all had to go work, packing shingles, and then worked up through the mills, and all of the first ten years I was a lumberman, a teamster, a bark peeler, cutting logs, sawing shingles, making boards and laths, and at 14 was running the mill and doing the job and hiring the men.

I state that so you can see that there was no suggestion about when a kid could be employed—a minor. One was entitled to work in the most dangerous places, even as a little boy. Some progress has been made in that line since then, but the thing that struck me when I examined the exhibits was that all about me were devices for preventing accidents.

When I worked in the mills there was not any guard on the saw; when I was in a machine shop there was nothing to protect the laborer from injury from any punching machine or lathe or drill machine or anything else. You took your chances everywhere. All of this splendid work has come along in the way of evolution in business and has kept pace with the other conditions in this country, and it is not so long that that has been going on.

You live in the most remarkable country in the world, one of the countries making the greatest progress, growing in every line. The trend of the times is to improve every condition and save human life, and in saving human life you save money. The purpose of these Congresses is to teach people better how to do that and to gather a stronger and better sentiment for that purpose. There is no finer work under the sun than the economy of human life in industry. To that end these Congresses are held.

This morning we are going to have first this very fine glee club. It is the Pullman Porters' Quartette, and we are going to listen to them now. I want to fulfil the Commissioner's notion, I guess, by trying to make "brevity the soul of wit" and say no more, but proceed with the business. (Applause.)

The Pullman Porters' Quartette rendered a few selections, encores being demanded. (Applause.)

CHAIRMAN WHIPPLE: To be very frank with you people, I like you. You know a good thing when you see it, and you beat an audience I had one time in St. Lawrence County all to pieces.

After traveling 350 miles to speak to them on a rainy night, I got in at 8 o'clock and went to the hall. There were two men there, and I said: "Are there to be others?"

They told me they thought not.

I said: "That is too bad. I have come 350 miles to make a speech, and I would like to make it."

One fellow remarked: "By George, it is too bad. I drove sixteen miles to hear you make a speech, and I want to hear it."

I said: "I will make it."

The other chap then stated: "That is courteous of you, Mr. Whipple, but if you have to do it, be as short as you can, because I am the janitor and I want to shut the place up." (Laughter.)

We are going to change the program a little bit this morning. I am not going to explain why, but there is a good reason. We are to listen now to Mr. J. D. Harnden, Superintendent, Testing Department, General Electric Company, Schenectady, on the last subject on the program—"Safety in Electrical Testing." (Applause.)

SAFETY IN TESTING ELECTRICAL APPARATUS

By J. D. Harnden, Superintendent, Testing Department, General Electric Company, Schenectady

MR. CHAIRMAN, LADIES AND GENTLEMEN: The manufacturing of electrical devices and apparatus has grown to a point where it becomes not only essential but imperative that more attention be given to that part of the work known as testing.

It is, indeed, a pleasure to be able to state that it has been my good fortune to be connected with an industrial company; namely, the General Electric Company, which from its early beginning has been actively interested in all phases of "Safety First" matters. Paralleling the growth and development of its business have come great extensions and improvements to the system of grappling with this important problem. As a result we find diligently engaged in this work a vast organization consisting of a general committee, having local works and departmental committees with large numbers of workmen on the floors. Such an organization forms an agency whose influence is felt in every department of the business and through which it appears great progress is being made.

The electrical industry, rapidly taking form as one of the major industries of the world, is made up of many phases, and an essential part of each is electrical testing in one form or another. Wherever the manufacture of electrical apparatus or devices is carried on testing is found usually paralleling and considered an important part of manufacturing and engineering operations. Much testing is necessary to determine that all defects of design and manufacture have been eliminated; that guarantees of performance in contracts to customers have been met; and that sufficient

data for the guidance of engineers in making future designs have been taken.

While this paper applies to safety in all kinds of testing operations, it deals particularly with electrical testing in the largest plant of the General Electric Company, which is located at Schenectady. This plant produces in great volume and variety small appliances such as radios, switchboard and control devices, as well as large power apparatus consisting of direct current motors and generators, synchronous converters, alternating current motors and generators, induction motors, frequency changers, steam turbine driven generator sets, transformers, regulators, rectifiers, with combinations of the above units forming motor generator sets, etc., together with a vast amount of development work of every conceivable kind. We now think in terms of super-power machinery with a voltage range up to one and two million volts as used in some of our testing laboratories.

The testing department is organized along the lines of other divisions of the factory with a superintendent, general foreman and foremen and assistant foremen in each manufacturing section. The working force consists of about 1,200, most of whom are young college graduates, the department being a vast laboratory operated as a training course, much the same as hospital experience for young doctors.

In some places the opinion prevails that such work is just naturally extra hazardous and that more accidents than usually occur in other kinds of work must be expected. I do not share this view, although as long as electricity is used there will always be a great deal of hazard associated with the physical handling of electrical apparatus and power circuits. However, with a full realization of the conditions and an earnest and sincere desire to prevent accidents, operations of this kind can be performed with an accident record no higher than is usually experienced in other classes of work. A low accident rate nevertheless can be accomplished only by consistent efforts on the part of all supervisors of testing departments who must be made to understand that the prevention of accidents is one of their first duties and fully as important as the work to be performed.

Electrical testing involves the handling of circuits operating under a very wide range of conditions, from tiny devices using only a few volts and small currents to huge machines of great power and high voltages. It also involves steam and mercury vapor boilers operating under conditions of very high pressures and temperatures. Two hundred and fifty pounds steam pressure was considered high only a few years ago, but now we have steam turbines of 1,200 pounds pressure in successful commercial service. Also we find compressed air, vacuum producing equipment, as well as gases of various kinds, such as the hydrogen cooled generator and similar things.

We have all of the recognized electrical hazards, together with the mechanical hazards, which include such things as the bursting

of rotors or flywheels, armatures and pulleys; the hazards incident to running belts, rotating shafts, couplings, etc. The bursting of rotors or flywheels with disastrous results must be guarded against by the use of speed limiting and other thoroughly reliable regulating devices. Pulleys, belts and shaft extensions must be well protected whenever machines are in motion. When testing for over-speed (usually 200 per cent speed) such as is done in case of the rotors of water-wheel driven generators, extra precaution should be taken by placing the rotors in underground pits, which are especially designed for this class of work. Usually it is found desirable to provide facilities well out of range of any of the manufacturing buildings, where abnormal or unusual tests can be made—especially if it is desired to test to ultimate strength or destruction.

Great care must be exercised in the selection of the men for this kind of work and all must be physically capable. Those with defective vision, hearing, subject to fits or any other ailment which may be the cause of an accident should not be considered; hence the need of a physical examination before employment.

Before starting work a person thoroughly competent with reference to all rules and regulations should spend considerable time with each group of new employees and much attention must be given to determine that each man is a careful workman.

Accidents in electrical testing cannot be entirely eliminated by the usual practice of guarding dangerous places, although it should be done extensively. For the reason that men testing machines are sometimes in complete control, connecting, adjusting, taking electrical readings, changing connections and performing various other duties incident to the job, they very largely create safe or unsafe conditions as each step of the work progresses. We must use guards wherever they will be of value, but our main reliance will always be in educational programs and discipline.

Therefore department heads will find it necessary to pursue a policy of continuous instruction in some form to best meet the needs. The following plan has been found effective: Monthly meetings (or oftener if necessary) on the first Friday of each month at 7:30 A. M. of all supervisors on both the day and night shifts of all testing sections. A large part of each meeting is always devoted to safety matters, each accident is discussed and ways decided upon to prevent a recurrence. Some plan that will insure all information and instructions being passed down to the workmen is just as important. It is a common fault with supervisors that they sometimes possess information sent out from headquarters, but no one else knows about it. To avoid this, and as an agency of foremen's training, each foreman should call his men together for a few minutes whenever necessary to give them full and complete instruction.

Every man should be given a Safety Manual embodying all the safety rules of the department, as well as detailed instructions with reference to the work. The Manual should be in three parts:

First—A detachable sheet to be returned to the office, not later than one week of service, certifying that the rules have been read and are understood.

Second—All general miscellaneous information bearing on the subject.

Third—A chapter of the most important safety rules, the infraction of which justifies the action of discharge.

The following is a sample of the signed detachable certificates:

THIS CERTIFICATE IS TO BE SIGNED BY EMPLOYEES OF THE TESTING DEPARTMENT AND MUST BE DELIVERED TO THE OFFICE NOT LATER THAN ONE WEEK AFTER ENGAGEMENT.

I hereby certify that I have received a copy of the book "Instructions for Testing Electrical Apparatus." I understand all the instructions in the chapter on "Safety First" and appreciate that all my work in the testing department must for the safety of myself and others be carried out with extreme caution and thoroughness. I understand that I should consider all circuits and current carrying parts of machines to be "alive" unless I know of *my own knowledge* after careful inspection "that they are dead." When circuits or currents carrying parts of a machine are "alive," I shall consider it dangerous to touch or to approach any part of it, even if insulated, closer than the following distances:

750	to	2,500 volts	1 foot
2,500	to	10,000 volts	2 feet
10,000	to	50,000 volts	3 feet
50,000	to	100,000 volts	5 feet
100,000	to	250,000 volts	10 feet
250,000	to	500,000 volts	15 feet

I have had instruction in the "Prone Pressure Method of Resuscitation from Electric Shock" and feel capable of applying the method in case of need.

(Signed) ————

Date ————

A very active suggestion system is in operation through which about 5,000 suggestions are received from the workmen each year, many of which relate to safety methods, and those possessing merit are put into use at once.

Much may be gained by offering prizes each month to the department with the lowest lost-time accident record as a means to arouse interest and keep the subject of "Safety First" at all times in the minds of the men.

The subject may be summarized in the following four statements, namely:

First—Supervisors to the last man must be trained to think and work safely.

Second—Workmen must also be trained.

Third—Methods of operating all equipment must be in accordance with safe practices.

Fourth—Equipment must be maintained in good safe operating condition at all times for the service placed upon it.

Perhaps the most difficult of accomplishment is the training of supervisors; they must be made to see that the matter of prevent-

ing accidents is largely one of education, supervision and discipline. Supervisors must get the spirit of "Safety First" and pass it on to the men.

All workmen must be included in the safety and educational activities and so closely supervised that when one is known to be a careless worker he should be discharged.

The operation of all machinery and equipment must be in accordance with carefully prescribed instructions and all men must be intellectually of a calibre to interpret and understand them. All equipment must be maintained in good safe operating condition by systematic and thorough inspection. Outside mechanics, maintenance men or others must not be permitted to start work on any equipment until they have obtained a written slip signed by the foreman certifying that the source of power has been disconnected and that everything is "dead."

Adequate illumination is important. Undoubtedly many accident reports, specifying other reasons, should read, "Insufficient illumination."

The equipment, much of which is comparable with modern power-house installation, should be designed, installed and maintained with great care. The equipment used in testing naturally falls into two classes—permanent and temporary. Since the greatest hazard exists on that part of the equipment that of necessity is installed in a temporary manner, it follows that the maximum amount should be installed in permanent fashion. In most testing departments much more is temporary than need be, the excuse being given that things are up today and down tomorrow. On small devices a rather large percentage can be installed in permanent shape, while on large power apparatus fully 50 per cent of the equipment must be of a temporary nature, although many of the portable parts, such as test tables, circuit breakers, oil switches and other control devices can be designed and constructed in finished form.

There is a common belief that the only electrical hazard is one of shocks, but as a matter of fact there is also always present the chance of electrical burns from short circuits and arcs of all kinds. Where a large quantity of power is involved the results may be quite as serious as from burns on low voltage as from shocks on high-voltage circuits. The great danger lies both in direct burns from the arc itself and also the secondary effect of burning clothing. Therefore the greatest care must be constantly exercised to prevent accidental short circuits and power arcs with the destructive effects mentioned above.

The various kinds of general testing work in factory buildings naturally fall into three classes and the equipment should be designed accordingly:

First—Tests which can be made within an enclosure or room with gates interlocked with the source of power, thus excluding all persons. Wire and cable, transformers, insulators, etc., are

tested in this way, and all operations performed from the outside of the enclosure.

Second—Tests which can be made within an enclosure where all persons are excluded, except the testers, who must of necessity be inside to make the tests.

Third—Tests on large power machinery in the manufacturing shops, where it is obviously impossible to construct rooms for each unit, require the greatest care and attention. On this class of work we are faced with the most difficult problems.

Each unit must be erected in a thoroughly substantial manner on the test floor to avoid shifting or movement in case of accidental short-circuit. Substantial platforms equipped with steps and guard-rails are necessary around the larger units; also guard-rails to effectively prevent a tester from falling or otherwise accidentally coming in contact with high voltage or the rotating parts of a machine. The wiring, even though temporary and used only for a few hours or days, must be well done to prevent the cables from coming in contact with rotating parts and movement due to magnetic forces, the melting off of terminals, or a number of other reasons, which cause open or short circuits, grounds, arcs, etc.

A frequent cause of accidents in testing work is the likelihood of misunderstanding between men working together. This can be avoided by training the men never to take the word of another person, but always to look for themselves that conditions are safe to proceed with any work in hand.

Numerous devices have been developed which play an important part in the prevention of accidents and are used extensively.

High voltage A.C. testing tables, developed along modern lines of switchboard construction, are used. These tables contain the main and control circuits, potential and current transformers instruments, etc.

High voltage D.C. testing tables are designed with all power circuits enclosed within the table and the instruments carried in sliding drawers, which when pulled out disconnect all instruments.

The frames of most electrical machinery are thoroughly grounded and equipped with guard-rails for the protection of operators when inspecting bearings or other parts.

Power transformers are safeguarded by placing them within fireproof vaults or expanded metal enclosures.

Portable circuit breakers and oil switches are carried in substantially built and completely enclosed structures.

Insulated wooden mats are used in front of switchboards and test tables. Conspicuous signs in large numbers are used which indicate to all the character of the job; and white tape, meaning "high voltage" to every test man, is strung around the temporary circuits and other parts of a set-up.

Much attention is given to instructing the men in the "one-hand method of operating," and also that they must never risk their own safety to the insulation on cables or other parts.

The use of rubber gloves, metal lamp guards, metal armored air hose, the wearing of finger rings, wrist watches, metal pencils, long flowing neckties and loose clothing is prohibited.

An analysis of the few serious accidents which have occurred over a period of twenty-five years reveals some strange and interesting facts. Contrary to expectations it is nearly always the older and more experienced men who meet with accidents, indicating that the old maxim, "Familiarity breeds contempt," still applies; the new men are instinctively more careful. Also, a large percentage of accidents occur on the last half hour of the working shift, indicating that the mind is for a moment on other things—the trip home or an outing of some kind, and at such times the work in hand does not receive full concentrated attention. It would naturally be expected to find more accidents on the night shift than on the day shift, but again, considering the man-hours worked, our experience shows the same on both shifts.

In spite of all that can be done testers will at times receive electrical shocks; hence the necessity for every man in the department being thoroughly trained in the method of resuscitation by the prone pressure method, which has in late years been used as the most effective. To accomplish this we have adopted the practice of instructing and demonstrating the method to every man before he is permitted to start work, with a follow-up demonstration every month thereafter. This follow-up system is conducted by the foremen and each man is required to actually go through the motions of performing the method.

In conclusion, therefore, the problem resolves itself into one of creating the safety habit throughout the department. This must be accomplished by every conceivable means and done so effectively that it will find expression by every man in every act on every job. (Applause.)

After reading his paper Mr. Harnden showed some slides illustrating it. (Applause.)

CHAIRMAN WHIPPLE: Mr. M. H. Christopherson, of the State Insurance Fund, is here and I understand he is going to take up the subject of "Conveyors and Conveying Machinery, Trucks and Wheelbarrows." (Applause.)

CONVEYORS AND CONVEYING MACHINERY, TRUCKS AND WHEELBARROWS

By M. H. Christopherson, Director of Service of the New York State Insurance Fund

MR. CHAIRMAN AND DELEGATES TO THE CONGRESS: Yesterday I was requested by the program chairman to substitute for somebody who evidently has failed to appear, and as I have not been handed a paper to read I hope you will bear with me if you find anything missing in my hurriedly scribbled pencil notes.

As the building construction was more or less the subject of the afternoon session yesterday I am going to continue that subject by referring to wheelbarrows and trucks first and with them disposed of I will say something on conveying machinery.

A wheelbarrow in itself does not appear to be a very hazardous tool, nor is it a machine that requires a great deal of training to manipulate. A sturdy man learns to balance it very quickly. With that said it would seem that everything had been told of the barrow. However, I suppose the one wheelbarrow has been responsible for a great many deaths in its day, and as it does not seem to be going out of fashion like the old Ford, the wheelbarrow may continue to do a lot of mischief.

The barrow with its wheel way out in front has the unfortunate habit of running foul on the edge of some material lying in its path and in such case it usually tips to one side sufficiently to drop off a few bricks or tiles, and these frequently find their way between the openings in the temporary flooring. It is easy to visualize that at least one of these bricks or tiles may have found its way down through the wide openings between these floor planks (which was discussed yesterday) and landed on somebody's head, and in many instances in excavation work where a single plank is used for wheeling on, the barrow tips over, throwing the material on men working below, and may also carry the man who is wheeling it down into the trench.

Then again it does happen that the barrow is not carefully pushed on the material hoist; the handles are permitted to project beyond the platform edge, and when those handles strike the floor beams over goes the barrow, spilling its contents on anybody who may be within their path. Aside from the need for being careful to avoid any of these troubles it may be well to examine a barrow occasionally to see that the wheel is not sprung out of true and the wheelaxle is not nearly worn out, as we know that this much abused tool is seldom oiled; then see that the body of the barrow is kept in repair. I believe that is enough said for the barrow. I would suggest that building construction foremen should think that over a bit.

I want to speak a word of caution about the mortar or material hoists. Do not ride on them. They have no safety devices that will stop them in case the hoist rope should break. The ropes have a habit of breaking rather frequently. In such case the hoist will drop to the bottom of the shaft and death is the natural consequence. Keep away from the hoist openings; your head may get in the path of the platform if you do not. All hoistways should be safety guarded, but yesterday's discussion indicates that such is not always the case.

The truck is a wrecker of many homes. It is now so generally used for conveying workmen from the town in which they live to the job on which they are working, probably miles distant, that many accidents occur in their hurried rush. Frequently these trucks are so crowded that the men stand even on the edge

of the truck bodies and almost hang to the sides. If they are fortunate enough to avoid a collision or a turn-over they are at least liable to drop men to the roadway and run over them. The possibilities of spilling their human loads is of course most important, but many accidents occur where material is also carelessly loaded, causing injury to men who unload or by material falling off. The trucks themselves are usually strong enough for their loads, but those in charge have a serious responsibility. Then, do not race over a railroad track. The Supreme Court says the vehicle driver must stop and make certain the road is clear; so the large indemnities paid by railroads may be a thing of the past. A man's family finds it difficult to live on compensation, so why take a chance?

Now we will treat with the conveyor subject. It would be difficult to show to what extent the handling of material is now being accomplished by the various types of conveyors. Only within the last two or three years has the question of preparing any safety codes been considered.

Before I speak of the real conveyor, which the program evidently intended, I would like to say something about a little conveyor that gives a great deal of trouble. It is installed in nearly all restaurants and in various places where they cut meats and vegetables. We run across it very often in our inspection, and frequently read of some girl or woman and sometimes a man who have had their fingers cut off. It is the meat and fish grinder. It has what may be termed a special conveyor that feeds the foodstuffs into the cutter chamber. Down the throat of this chopper the larger particles of food do not go through readily. Employees have a stick with which to push down the material, but usually they do not use it. Instead they shove their fingers in. Fingers are often pushed through too far, with serious results. The last report I had was that two fingers had been lost by a woman in this way. It is a simple thing to overcome that by extending the chopper so that the hand cannot go down. We use that same method in guarding other things. If we cannot install a guard to fully enclose a device we put the guard screen out far enough so that a worker cannot get his or her hand into the hazardous point of operation. That conveyor is a little thing, but it is there. It is not the conveyor we have in mind, but I think that there are many accidents on that little conveyor as on all these others.

Then we have the conveyor of material, the mechanical conveyor, which has grown to be a tremendous business. For those who do not come in contact with equipment of that kind I might explain that these conveyors are from the small meat chopper to which I have referred to the very large belt conveyors that are used in coal mines, cement plants and various places like that, where the belt may travel a half mile. I think there is one in Pennsylvania now that covers considerably further than that.

While accidents on conveyors are not so frequent as in other means of conveyance they have been unusually severe. Many feet

have been permanently crippled or amputated by the treacherous spiral conveyors. The bucket conveyors have added their victims, the chain type have maimed some and the belt type have dropped material on others. Even the gravity type, with their swiftly descending packages, have injured others. Conveyors of the vertical as well as horizontal types are recognized as efficient means for transporting goods from place to place and their use is rapidly being extended to the handling of goods that were formerly transported on hand trucks along the floor or on elevators, for handling coal and other mined products and for handling grain and liquids.

There is now being sponsored by the American Society of Mechanical Engineers and the National Bureau of Casualty and Surety Underwriters the preparation of a conveyor safety code, or, I may say, codes, as they are treated as six separate subjects. They are: Belt conveyors, spiral and drag conveyors, gravity conveyors, chain and belt conveyors, cable conveyors, and air, steam or liquid conveyors. It goes without saying that the treacherous spiral conveyor, which runs in a trough in the floor, will have its entire top covered except at places of loading. Anybody using such conveyors should certainly have taken that precaution long ago, but it seems that many have not; otherwise there would not have been any maimed or amputated feet from that source. The chain and bucket conveyors have many places that require guarding.

It is rather difficult to enumerate here, particularly in a short time, the hazards encountered; but I happen to be on the committee, so I have had some late knowledge of the conveyor troubles. I am not going into a great deal of detail, as every conveyor has its own peculiar hazards, dependent on its location and the material it has to handle. So it is largely a case of maintenance. There is one difficulty that management and employee must cooperate on and that is in the matter of maintenance. Recently a serious accident occurred where a man was at work on the mechanism and another employee, not understanding this man's signals, turned on the power. The repair man was caught and seriously injured. Such occurrences have not been infrequent. Employees should not ride on conveyor chains or rolls, as a moment of inattention is liable to end seriously.

Briefly stated, all places on horizontal incline or vertical conveying apparatus should be guarded in every place that anybody is liable to come in contact with dangerous moving parts or where material can fall off and injure anybody. If these precautions are taken and employees do not deliberately climb onto moving parts that will entangle them there is little liability of being injured. Carry out these precautions until the code is completed, and after that as the demand for such equipment increases guarding to standards should be required.

Now, as to the installation of conveying apparatus. First, I might say the designing of it, its location, has to do of course a great deal with the progress of the material that is to be handled, so it is difficult to change or fix the location for a conveyor. It

cannot very well run around a corner and do it efficiently, so the idea is to run in a straight line wherever it can. Therefore it is necessary first to make the conveyor do its work efficiently; then the conveyor should be guarded.

There are many engineering problems, I think, in the conveyor, its installation and maintenance. I am going to repeat the thing I have said before, and that is, where machinery of various kinds is used in the plants it is almost an impossible thing for the man in charge of the maintenance, no matter how capable he may be, to know everything that has to do with the machinery in that plant, particularly if it is a new line of equipment.

Now I think there is only one thing to be said in cases of that kind, and that is, the man in charge of maintenance should be honest with himself, should be honest and frank with his manager or the man to whom he has to report, and when there is anything he does not understand to frankly say so and report back, "I do not quite understand this. Probably we had better call in a specialist who understands this particular equipment and get this information, because an error in the installation or the maintenance may cause serious injury to other people." It is not so much a point of saving equipment, but it is a case of the prevention of injuries to those who work about it.

I think everyone who speaks of a specialist today must define the specialist. I think the definition of a specialist is a man who knows more and more or less and less. I think that is the briefest way to define a specialist. A specialist may not know all you know, but he may know considerably more than you know of the particular thing that he does know. (Applause.)

CHAIRMAN WHIPPLE: I want to offer a suggestion which may be food for thought. Providing I am sound in my thought myself, that will be so. I noticed the Commissioner yesterday said that the accidents reported for the last fiscal year (518,297) were 76,896 more than the year before, when they numbered 441,401. The thing that is bothering me is that there were no more employees engaged in business and there was greater security from accidents; then how does it happen that there were more than 76,000 of them? Think about that a little bit.

I understand Col. J. P. Jackson is here and while he is on the program for this afternoon we are filling up a little this morning and he has something to present. I want to say this, if you please, I am obliged to leave. I have to make a 12 o'clock train. I want to thank you for the courtesy of allowing me to act as your Chairman and I am going to ask my friend Doctor Patton to preside for the time being and will bid you adieu. (Applause.)

DR. EUGENE B. PATTON, Director of the Bureau of Statistics and Information, Department of Labor, assumed the chair.

ACCIDENTS IN THE ELECTRICAL INDUSTRY

Illustrated Talk by Col. J. P. Jackson, Manager of the Personnel Bureau, The New York Edison Company

MR. CHAIRMAN, MEN AND WOMEN OF THE INDUSTRIAL SAFETY CONGRESS: You will note that I am scheduled to give my address upon electrical safety at the afternoon session. On account of certain rearrangements which have been necessary in the program, Doctor Patton has requested me to show the pictures this morning which I intended to do in connection with my address. I shall be glad to serve Doctor Patton in this way, and it is possible that the comments I make this morning and the pictures may serve as a proper introduction for my talk this afternoon.

Before showing the slides it seems desirable to emphasize by two or three illustrations the fact that accidents are not only a serious economic burden to industry, but represent human losses to individual victims which are of incalculable cost. Thus, only yesterday a man came into my office who had been injured about six months ago. He walked with great difficulty and was unable to sit down or stand up more than a few minutes because of his injuries. His accident was caused by a strain which resulted from other men dropping their ends of a heavy piece of apparatus which he was helping to carry. That man appreciates that the cost of an accident is far greater than its mere economic phase, in spite of the billions of dollars which have been wasted because of accidents in this country.

A little later the same day I received a telephone message that a man had been crushed by a truck. The man was at the manhole of an electrical system, within proper safety flags and guards. The manhole was located at a street crossing. Two cars crashed on the wet street at the corner. One of the cars was pushed over the guards and the manhole and slid over on the sidewalk, injuring the splicer and three small boys. The man was immediately sent to the hospital, and it fell to our lot to notify his wife and mother. Any of you who has had the duty of giving such notification will have a clear conception of the cost of accidents in human suffering, and will be thoroughly convinced of the need of giving at least the same careful, scientific, trained attention to accident prevention as is given to economy or perfection of production.

The topic of my address is primarily electrical safety, and my first illustration (Plate 1) shows the causes of accidents in a large central station organization. The statistics are quite similar to those tabulated by Doctor Patton for industry in New York State during 1927. Handling objects is the largest offender, and this is followed by burns, falls, flying objects, and tools. These five causes of accidents are the most important in the electrical industry, burns being greater than for industry as a whole.

Following these material causes in the order named are striking objects, vehicles, machines, and falling materials. Machines are a smaller cause for accidents in electrical work than for industry as a whole.

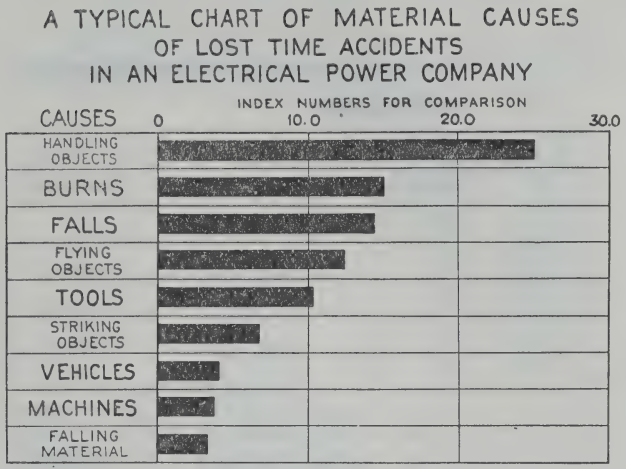


Plate 1.—"Machines" are a smaller cause of accidents in the electrical industry than in the average for all industry, while burns are somewhat greater relatively. Otherwise the chart is not unlike the average for industry as a whole. (Index numbers are used in this and following charts, as they are for qualitative comparison only.)

My second illustration (Plate 2) is also similar to the data obtained by the Labor Department for the whole State, and indicates the responsibilities for accidents. Of these negligence of the injured is almost three times as great as any other human cause. In the electrical industry risk of employment comes next. Then, with a greatly reduced number of cases, come accidents out of the company's control, infections caused by failure to report an injury, accidents caused by defective construction, negligence of others, non-use of safety appliances, negligence of the supervisor, and a few other miscellaneous human causes. Information of this character leads to the conclusion that the electrical industry has given careful thought to providing safe and satisfactory working conditions, and that the important problem of the day is to develop more effective safety training among employees. The situation is much the same in all industry.

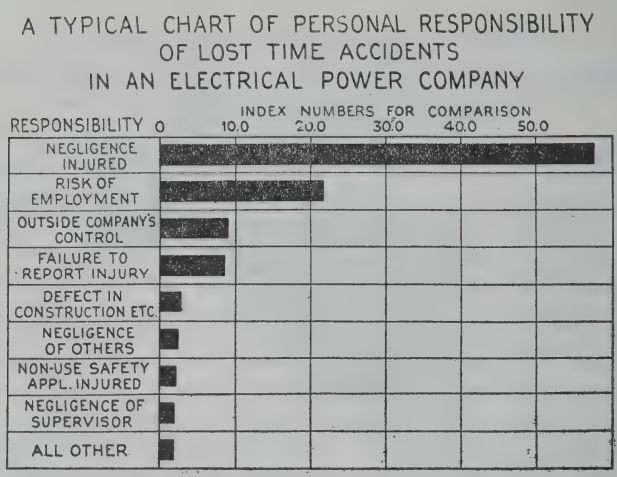


Plate 2.—"Risk of Employment" is large, as many employees in the electrical industry must work in buildings of all types not under company control; otherwise the chart indicates careful safeguarding and good working conditions, but shows the field for intensive employee safety training.

The next illustration (Plate 3) indicates that the electrical industry has been gradually reducing the frequency of accidents, and also their severity, between 1923 and the present date. The recent activity of the industry in perfecting safety organizations should increase this rate of reduction during the next few years.

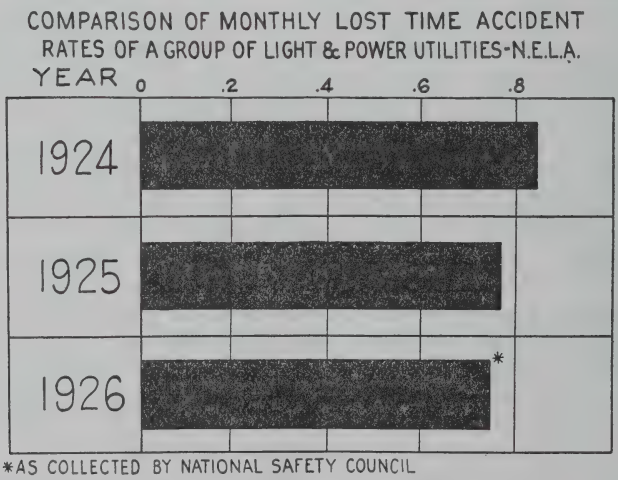


Plate 3.—This plate shows the beginning of safety improvement which is rapidly gathering headway throughout the electrical industry.

The next illustration (Plate 4) shows that the light and power utilities have already reduced accident frequencies to less than those to be found in the metals, construction work, woodworking or mining. However, they have not yet reached the low rates to be found in the chemical, automotive, cement and power-press industries.

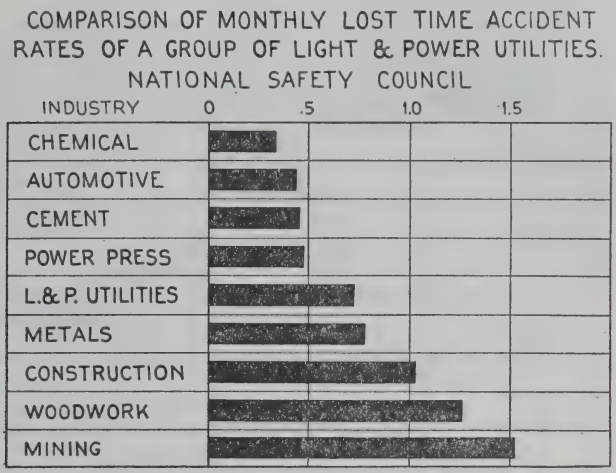


Plate 4.—This plate shows that the light and power utilities hold a median safety position in industry. This has been attained by intelligent accident prevention work, and the relative position is being continuously improved.

The next illustrations to be shown are part of the educational work used by a particular central station company. These include, in the order shown, a monthly trend chart (Plate 5) showing the company accident frequency for each month over a period of years, a comparative departmental chart (Plate 6) showing the accident frequencies for 1926, and for the last two months for each department, and two departmental subdivision comparative charts (Plates 7 and 8) showing the accident records for the past month of each gang or division of the department. (Index numbers are used.)

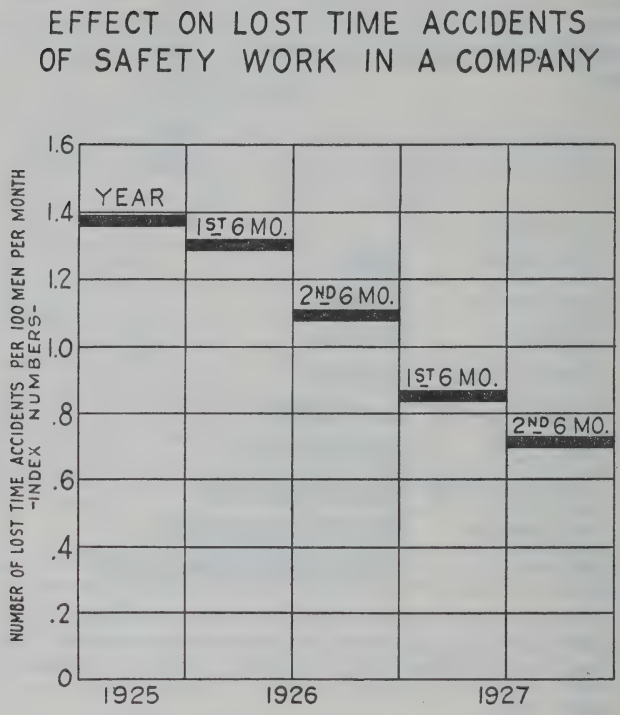


Plate 5.—This chart shows a substantial drop in lost-time accident frequency. It is due largely to the inauguration of company organized safety work. Another large step downward is now under way in the same company. This chart, and plates 6, 7 and 8, are brought up to date and distributed monthly to officials of the company.

Charts 1 and 2 are distributed to all department heads and are posted on company bulletin boards. Each department receives multiple copies of its subdivision chart, and these are distributed by the department head to the bureau or division chiefs or foremen, as the case may be. This company has a central safety committee which meets monthly, and departmental committees, many of which meet weekly. Its accident trend has shown a decrease for this November to about two-fifths of the frequency of the average month in 1925. This decrease through

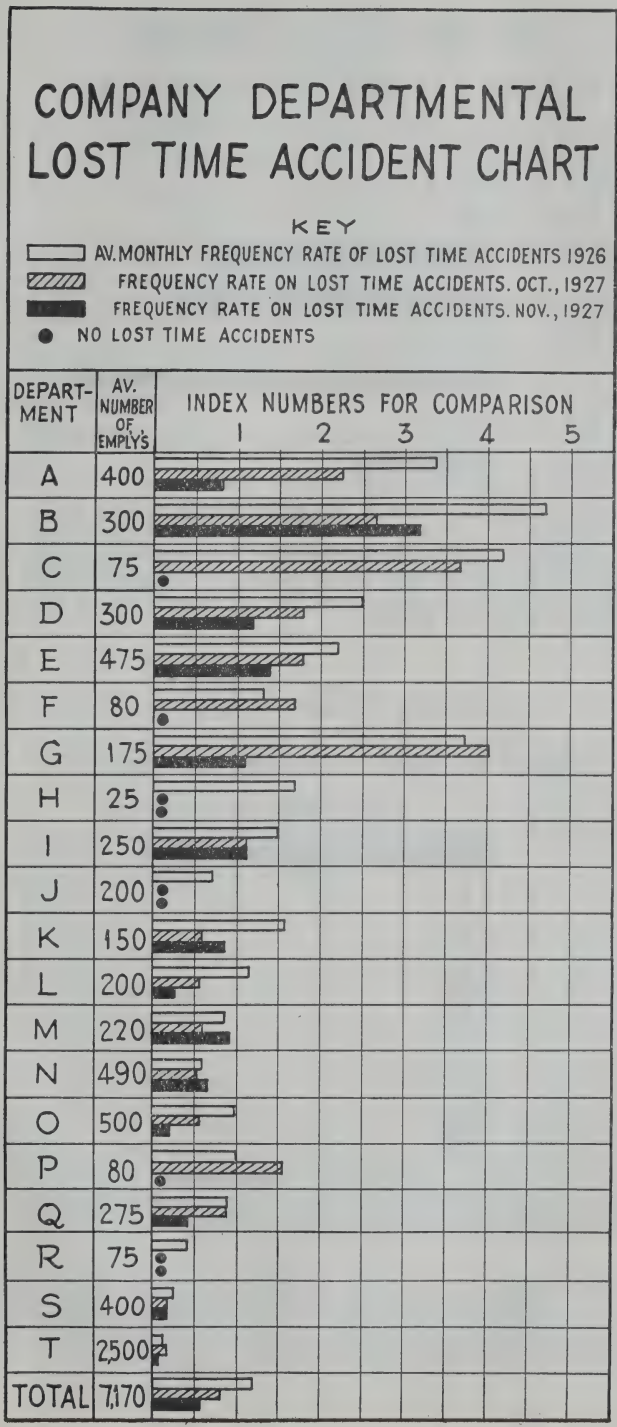


Plate 6.—Gives the frequency of the several departments of the company for the previous year, the previous month, and the month closing. It furnishes a basis upon which a department can make comparison against its own past record, and with other departments.

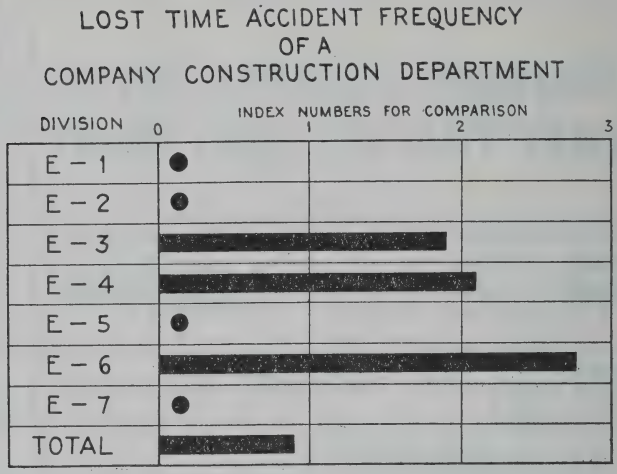


Plate 7.—This type of chart is distributed to each operating and construction department monthly. It forms an excellent medium by which the superintendent can compare the safety records of his various departmental divisions. It will be noted that four divisions had no accidents during the month.

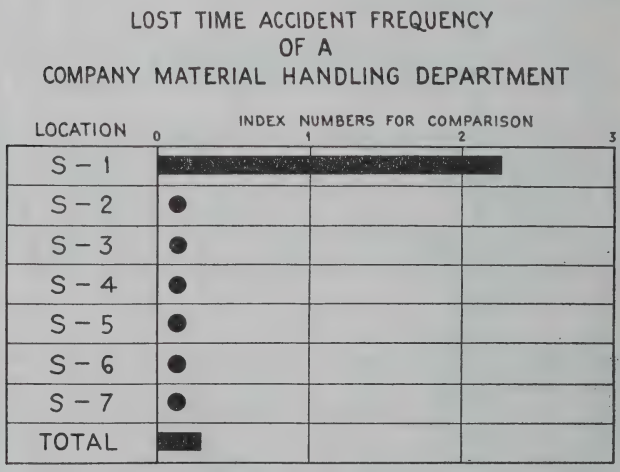


Plate 8.—This is a second example similar to that of Plate 7, and is used in the same manner. It will be noted that six divisions had no accidents during the month.

the years 1926–1927 has been a reasonably steady and consistent dropping in accidents, and shows very clearly the effect of conscientious and continuous safety work. (Applause.)

[The remaining illustrations given by Colonel Jackson dealt with specific safeguards used in the electrical industry, and for that reason it seems unnecessary to present them here.]

CHAIRMAN PATTON: We have visitors here from a number of other States and also a number from Canada. I suppose some of you feel that the trend to and from Canada these days will all be in the direction of Canada.

We are happy to have with us Hon. James H. H. Ballantyne, the Deputy Minister of Labor of the Province of Ontario. Although he was not regularly scheduled for an address he has kindly consented to come up on the platform and give us a few remarks on the general conditions of industrial safety. (Applause.)

HUMAN FACTORS INVOLVED IN ACCIDENT REDUCTION

By Hon. James H. H. Ballantyne, Deputy Minister of Labor, Province of Ontario, Canada

MR. CHAIRMAN, LADIES AND GENTLEMEN: Probably you may have heard the story of the circus that was coming to town and which had advertised quite widely that one of the very special exhibits was a lion that was famed for the noisiness of its eloquence. Unfortunately when the circus got to town the lion became very sick. But the management was quite versatile and commandeered the services of the largest dog they could find to take the place of the lion. The result was when the performance took place the audience, instead of hearing the mighty roar of a lion, heard but the shrill bark of the dog.

I am somewhat in the position of a dog rather than a lion, because when one is called upon to fill in, you cannot get or expect to get what is advertised.

However, it is a great pleasure, indeed, to attend this Congress under the auspices of the New York State Department of Labor. We from Canada are a much-indebted group to your Commissioner, Mr. Hamilton, for his courtesy and his kindness in extending to us this invitation and giving us the opportunity to come among you. When all is said and done, labor problems, whether you take them from the standpoint of accident prevention or any other phase of work in which a Labor Department is interested, are more or less similar in every country. Labor problems, as such, arise from the peculiar and significant relationship that exists between employers and employees in industry, and safety work or accident prevention is but a manifestation of that relationship between employer and employee, conditioned upon the kind of development that is going on in the organization of industry from time to time.

It is not at all a surprise to me that accidents should be on the increase despite the very large amount of effort, and able effort, indeed, that is being made toward their elimination, when

one considers that from a biological standpoint humans have not made any great strides in comparison with industry and that the average person today is not so very far advanced from the person that lived under the Greek or Roman civilizations. It is an open question among our historians and intellectuals whether or not our intellectual powers are any greater. When you talk about the human factor in industry it seems to me that we must get into our minds some basic understanding of what the human factor means in and to industry. When you realize that, as I have tried to realize it, and take into consideration the enormous change and development that is taking place in industry itself, such as concentrated effort, time and motion studies, specialization and standardization, and many other factors that go toward mass production as we have it today, is it not surprising that we may be somewhat slow as individuals in adapting ourselves to the changed conditions that are taking place in industry?

I heard your Commissioner Hamilton in New Jersey a few months ago read a very excellent paper on accident prevention. If he emphasized one point more than another he emphasized the fact that the greater majority of accidents today came within the category of the non-mechanical type. This means that the engineer, the chemist, the business executive and the scientist, generally, have probably kept control of accidents by invention and use of mechanical safety devices at a pace similar to the development that is taking place in industry. But I am not so sure that we have kept pace with the changed relationship that takes place in industry between employer and employee under conditions of mass production.

On the latter point allow me to illustrate just a thought that I have in mind. The day before I came to Buffalo there was a deputation of patternmakers appeared before the Minister of Labor, Hon. Dr. Forbes Godfrey, and myself, relative to the application of certain sections of our factory codes in Ontario. They desired to have each pattern shop throughout the Province equipped with what is termed "disc sanders" and substituting "roundheads" for "squareheads." I do not profess to be technical in all of these matters, but if I am not just accurate I believe most of you will understand what I mean.

One point they brought out was that our inspectors of factories in paying visits to such establishments had called upon the workmen for an expression of opinion as to whether the equipment they were asked to use by their employers was, or was not, inimical to their health or safety. The employee confesses that he cannot give an honest and unbiased opinion when his employer is there because in several cases the employees were discharged because they gave, in their judgment, an honest and unbiased opinion of the kind of equipment they are asked to use.

In accident prevention work it is just possible we are putting the pyramid on its apex rather than on its base and that we are

not getting nearer or near enough to the individual worker in industry today to acquaint him or her with the fundamentals that go towards accident elimination and accident prevention. (Applause.)

Can it be said by any reasonable man, making every allowance indeed for the exceptions that always happen to the law of averages, that there is any workingman or any working woman anxious or desirous of incapacitating himself or herself in some way, either by destroying his or her health, losing a limb or in other ways maiming his or her body? I do not think that contention is at all right, despite the facts that accidents are on the increase.

The employer has done a great deal and is doing a great deal to humanize industry as much as possible, but I think the time has come when he ought to get away from either the philanthropic or the humanizing aspect of safety work and come out frankly and boldly and state that safety work is a science and must be pursued to a scientific conclusion. (Applause.)

The engineers, especially the safety engineers, that are engaged by great corporations to make special studies of safety work are oftentimes imbued largely with the idea of production. It must be confessed that much of their work has been for a greater degree of safety consistent with vaster production. We—and when I say "we" I talk on behalf of the State Labor Department officials—are very much indebted to the various safety engineers who have given of their time and ability in making very great advances in our work and making it better and easier for the State officials to perform their work along safety lines, because if the safety engineer has done anything he at any rate has taught the employer that safety work may be carried on as an advantage to his business as well as being something that is due the employees.

Nevertheless greater strides must be made if we are going to face this accident prevention problem fairly and squarely. I would like employers to realize that when a State or a Provincial official goes to his factory he or she does not enter that factory or any establishment with the intention of placing an employer in the position of incurring unnecessary expense, but that our official, with his or her training and his or her experience and his or her desire to administer labor laws as fairly and equitably as possible, is making certain recommendations because he or she believes that not only is it economically good for the employer, but it is justice and a recognition of human values as far as the employee is concerned.

I think if employers would trust State officials more and more and see that their recommendations along various and diverse lines were carried out more quickly and more efficiently than they are in some cases we would be going a long way ahead in arresting the enormous increase that is taking place in industrial accidents.

Then again I come to another aspect of this question—that is, securing the confidence and the cooperation of the employee. It

seems to me that in a great many instances we regard him too much as a negligible factor, but he is the man, or she is the woman, who is sustaining the injury. If I were a chief executive I would try to get into personal contact, as far as it is reasonably possible, with my workers in order to let them understand that while it is absolutely essential that production must be carried to the greatest point of efficiency, yet at the same time point out that the social and individual interests must be taken care of by the employee himself, and impress on the employee how he or she can carry out his or her obligations, not only to the employer but towards the State.

The employee should recognize that the country in which he lives and grants him full rights of citizenship not only has provided him with an education, but is providing his children with an education. Laws and administrative powers whereby he or she may secure justice are provided for him, and the State is spending enormous sums of money on his welfare and the welfare of his dependents and that he has a duty to do, not merely towards his employer, but towards the State in seeing that he or she takes the best possible care of his or her person under all possible circumstances, whether in industry or out of industry.

A chief executive should not leave too much of this citizenship function even to foremen, because I have been in a workshop and I have worked under foremen, and I have been hypnotized by moving wheels and felt the desire to place my fingers on the moving parts of machines, and I am quite convinced from my own experience, both on the bench and in the office, that the nearer you come to the human side of people, and especially your employees, the better results you are going to get.

I feel that probably I have encroached much more on your time than I ought to. (Applause.) I trust I have said a few things that will give you cause for hope. I do not believe they can give any of you cause for concern. Undoubtedly we are facing a problem. Every speaker admits that it is the human problem, and if they are not getting results by our present methods surely we ought to call a halt and ask ourselves if after all we are traveling in the right direction.

If I can give you any advice today, and I do not say so in any critical spirit, it is to get as close as you possibly can do to the employee and find out why he scoffs, why he is absent-minded, why he allows both carelessness and absent-mindedness to imperil his life and limb and injure the cause and spoil the chances of his family enjoying average benefits and average comforts in life. It is said that the best way to appeal to a man is through his pocketbook. That is not always so. More often you can appeal to a man through his wife or through his family along certain directions. If it is pointed out to him that all the compensation that can be given him in this world cannot compensate for the loss of his eyesight, or the loss of his limbs, and that his wife and family and dependents and friends feel his loss just as

keenly and probably more so than he does himself, then I believe that by implanting such thoughts and such suggestions in the minds of our people we are going along toward getting the proper attitude of mind of the employee toward the industry and toward the other things in general.

I feel it is a human problem. Let us look at it from a human standpoint and approach it in a human way, by adding your thoughts to mine. By putting your experience with mine I am sure we will be doing a great deal toward controlling what is admitted is an abnormal number of accidents that are taking place today in industry.

I am indebted to you, Mr. Chairman, and to you, ladies and gentlemen, for the very patient hearing you have given me. We come from what is, comparatively speaking, a young country, not nearly as well industrially developed as your country. We learn a good deal from you. Just as our industries develop and our problems become as numerous and complex as yours, we expect and hope that when we need advice based on experience we can come to you for it. You have given us a great deal of very valuable information in the past, and at the present I am confident, from the very large gathering you have had in this Congress, that you, the citizens of New York State, are taking a very keen, and I know a very intelligent, interest in the work of accident prevention. As long as you continue so to do I have no doubt that while we will always have this problem to deal with in larger or smaller degree, you are putting forth your very best efforts and exercising your greatest intelligence in order that the public will understand that the work in which you are engaged is one of the most important and most valuable in the community life in which we serve. (Applause.)

CHAIRMAN PATTON: For this same, thoughtful and well-phrased address I am sure all of us are exceedingly grateful. The problem of the constantly increasing number of accidents reported, not only in this State but in other jurisdictions as well, is a puzzling one. I am quite sure that Mr. Ballantyne is right in insisting upon the fact that in what might be termed the non-mechanical field lies the greatest opportunity for accident reduction in the future. The hints and suggestions he has given as to the consideration of the human factors involved, I am sure, point the way to the greatest hope for accident reduction in the future.

Is Mr. C. H. Almstead in the room? If he is we would like to hear from him. [He was not present.] We intended to have a general discussion. If there is anyone here who really wants to give us some remarks very briefly we will be glad to hear from him; otherwise we shall have to adjourn on account of the lateness of the hour.

The session adjourned at 12:35 o'clock P. M.

WEDNESDAY, NOVEMBER 30

AFTERNOON SESSION

General Subjects: "Infections" and "Electrical Safety."

The Congress convened at 2:30 o'clock, President Hamilton presiding.

PRESIDENT HAMILTON: We were privileged to have Commissioner Cullen preside yesterday and Commissioner Whipple this morning, and we are glad to have another Member of the Industrial Board for this afternoon's session. Hon. Edward W. Edwards has long been interested in labor work and labor problems, and during the present year he was appointed by Governor Smith as a member of the Board, and his appointment was confirmed by the State Senate. I am happy indeed to introduce Commissioner Edwards to you. (Applause.)

CHAIRMAN EDWARDS: The subjects that we have for discussion at this afternoon's session are "Infections" and "Electrical Safety." I have been very much impressed with the sessions of this Congress so far, it being the second meeting of the Congress that I have had the pleasure and privilege of attending. The earlier one was held some years ago in the City of Albany, and I should say it was about seven or eight years ago.

We all know that at that time the work of accident prevention had not progressed very far compared to what it has up to the present day. Accident prevention to my mind is a very large subject. It covers a very wide field. What we are particularly interested in at this Congress is the prevention of industrial accidents.

We have heard many papers read and addresses made, all dealing with certain phases of the subject of accident prevention, and all of them have brought home to us the things that are necessary to do in order to accomplish something material in this great work.

We have been told about the employee factor—what can be done by the employee? It seems to me that in order to get the cooperation and effective assistance of employees as individuals or acting in concert where there are large numbers of employees, we must sell the idea; interest employees in the work of accident prevention. There are certain things that will bring to the mind of the average individual, especially those who have not the advantage of extended education, a sense of social duty to cooperate in the movement to prevent or to minimize industrial accidents.

There is one word that appeals to me very much in that connection, and if we can get it into the mind of the average employee in such a way that it will stick there, so that he or she

will always think of that word, we will have accomplished a great deal. That word is "Caution."

If the worker or operator can be educated and encouraged to due caution to prevent accidental injury to himself or to fellow-employees, the employee as a factor materially aiding in minimizing the hazard of industrial accidents will become a reality. I believe that intelligent cooperation of employees will accomplish as much as anything else. We heard this morning that industrial safety engineers are keeping pace with the progress made in the improvement and development of machinery, but that we do seem to lack in keeping the human factor up with developments made in those other directions. In that one connection we have a very important phase of this great work which is deserving of our more serious thought and effort. It involves a little more than education to successfully sell this idea. To get the cooperation of employees in general we have to awaken a lively interest on their part. The man's job has to be made attractive, if we expect to get him as an individual to take a keen interest in this work of accident prevention.

The first subject we have before the meeting today to my mind is one of great importance, and that is the prevention of infection where accidents have already taken place. We all know what it involves. Sometimes the most serious consequences come from the most trivial injury. A man may only have a scratch; infection may set in and ultimately he may lose his life or become so seriously maimed that he is a cripple. So that without doubt is one of the most important phases of this perplexing problem.

The other paper on the program this afternoon deals with "Electrical Safety." We have just seen a motion picture of a young boy injured while trying to recover his kite, which was caught on a high-powered electrical wire, and the method applied to resuscitate him after coming in contact with the electrical current. That also is a very important phase of the general problem of accident prevention.

On the program this afternoon we have Dr. B. J. Slater, of the Eastman Kodak Company of Rochester, who will speak on the subject of "Infections." I take great pleasure, therefore, in now introducing to you Doctor Slater, who will address you. (Applause.)

INFECTIONS

By Dr. B. J. Slater, of the Eastman Kodak Company, Rochester, N. Y.

CHAIRMAN EDWARDS, LADIES AND GENTLEMEN: To me, as a physician, it is a very inspiring sight to see such a group of men and women as are assembled here today, directing their efforts in the prevention of accidents. Physicians who are going in and out of hospitals every day are simply appalled by the ruthless disregard of life which is shown by many citizens of our communities. We ask you to bend all your efforts and to give as earnest thought

as you can to the prevention of accidents in your respective communities. No matter what we may do as physicians to patch up and to repair broken-down bodies, your work is necessarily more ennobling if it prevents the occurrence of accidents and makes our work unnecessary.

I know many times that your work must be unsatisfactory for the reason that if an accident is prevented you do not have the glory of knowing about it. The situation is very similar to our work in public health. When we lower the death rate we do not know that little Johnny Jones was prevented from having typhoid fever. All we know is that fewer people died this year than last year of similar diseases. While these figures point to the moral, I do wish there was some way by which you men and women interested in safety work could see concretely illustrated in the case of human beings the results of your work.

If you wish to see the neglect of your work you may visit any hospital any day of the week and hear the ambulance coming in to bring in people stricken down. They left their homes in good health only to be overtaken by an accident. Seeing this you will appreciate what wonderful work it is you are connected with, and you will get an impetus and stimulus to go on and devote yourselves with even greater energy to this wonderful work of accident prevention.

My subject this afternoon is "Infections." My feeling is that you have chosen a much bigger subject than you have man to discuss it. It is safe to say that 95 per cent of all the people in this room at some time or other are going to be overtaken by infection; whether we want to or not, the time is coming when the disease germ is going to take hold of us.

I am sure that many of us have no conception of what infection is. The Indians thought it was a visit from the thunder clouds, and the Greeks and Romans thought it was a visit from the angry gods. It was not until the work of Louis Pasteur, who was not a physician but a chemist and physicist, that any of us knew what infection really was. Later, in England, a very renowned surgeon, Lord Lister, applied the principles which Pasteur, the Frenchman, formulated in the control of infection in surgical operations.

I must say that within the last fifty years medicine has made more progress in the prevention of infection and its diagnosis than in all the preceding centuries which have gone before. Communities and men of great wealth are beginning to find out that it pays to invest in great medical schools and endowments to seek out and try to discover the causes of disease, their prevention and their proper treatment. Contemplation of the progress which is being made is tremendously inspiring to me.

There are diseases which we do not have to have unless we want to. Many are infectious. If we have certain of these diseases and die of them, this is our own fault. Medical science has within her power today the means of preventing them.

I am going to show you some of the commoner disease germs. These germs all have individuality, just the same as you and I. They lead an orderly existence, but unfortunately they thrive on you and on me. Again most unfortunately they are all around us and our job is to keep ourselves so protected and so fortified that having been attacked by them our own system will throw them off. In such instances as it is possible we should use such protective measures as the developments of medical science have placed in our hands.

Nature has been very beneficent to most of us. She in many ways knows a great deal more about healing wounds and infections than the physician does. All a physician does after all, ladies and gentlemen, is to try to gather in, if he can, the assistance of a kindly Nature to study her methods and apply them in the healing and prevention of disease.

These germs, as I said, have individualities. Some of them attack one structure, some of them another structure. By their fruits you shall know them. All of them are infections. We are discussing infections from the medical point of view and are not confining ourselves simply to the more common infections which bear relation to industry or employment.

What are the signs of an ordinary infection? Getting down to common, every-day terms, the first thing a man feels is a little pain. It may be in a finger; it may be in his head; it may be in his foot; or it may be anywhere in his body. He feels pain. Pain after all is a wonderful gift of Nature; it teaches a powerful lesson. Without it the invading disease would destroy us before we knew it. With its help we seek proper aid and relief.

The next thing is swelling or tenderness. These are signs of beginning infection, pain, redness, tenderness, and then we begin to get a little rise in temperature. Following this grouping of symptoms the next thing that would happen is a chill. A chill means that the germ is beginning to get out of the particular site in which it has planted itself and it is beginning to get into the general circulation. The infection may be shown by red streaks up the arm. When we see these streaks we know perfectly well that the infection that started in the finger is going to engulf the whole body if it is not stopped. All of the disease germs which will be shown do not show this particular grouping of symptoms. Everyone has a particular method of attack on the body, but in general the end results are practically the same; namely, rise in temperature, weakness, prostration, a chill and finally death if untreated.

I have a conviction that in exactly the same way as pain is a munificent thing, that the accident after all, bad as it is, may be used as a means of education in your safety measures. In exactly the same way that all serious diseases are preceded by minor symptoms, such as headache, sore throat, a chill, loss of appetite, etc., just so in my experience have all serious accidents been preceded by some minor little accident to which nobody paid much attention.

Of course when a man is killed there is a general investigation, but all of the serious accidents have been preceded by simpler ones, just as serious diseases are preceded by simpler symptoms. These simpler accidents should have pointed the way to more serious consequences that might follow.

From my experience in industry I believe safety departments should have access to all accident records, great or small. They should not form the habit of only drawing conclusions from serious accidents, because if they will read the lessons from smaller accidents, each one of these accidents carries a lesson in itself. The foreman who is careless, the foreman who is not looking after the smaller things, shows it in many different ways, and by apprehension of these smaller faults we might unearth and discover vicious principles, which if corrected will prevent something more serious in the future.

I know that most of you have never seen a disease germ. I am going to show, by means of slides, the commonest germ that we have to deal with. There is hardly a man or woman in this audience who will not some day meet some of them. We will not know them when we see them; we only know their effects. When we get pain, redness, swelling, tenderness and streaks running up the arm, we know that certain types of infection are setting in. The time to take heed is in the beginning. It is negligence in the care of smaller things which leads to our greatest infections.

I know it has been told you a thousand times that negligence of the smaller things after all brings the greatest consequences. All I am here to do is to reiterate for the thousandth-and-one time that little, minor happenings, that are apparently of no significance, the physicians find are of the greatest importance in the final analysis.

Slide 1—This is the Staphylococcus. This is the commonest germ in existence and is called ordinarily the "Staph." It is found practically everywhere. It is the cause of boils, infections in the ear, of the skin, of the throat and many other common diseases.

Slide 2—Here is a very close cousin to that germ. It is the Streptococcus. It is a very deadly germ. It attacks the tonsils, the middle ear—as a matter of fact almost any tissue of the body. A close relative of this germ is the cause of erysipelas and rheumatic fever.

I want to talk about these two germs now. These first two germs that you saw looked very much alike. They are present on the skin, more particularly in the tonsils, and especially at the roots of the teeth. The amount of destruction they have caused in the form of rheumatism, tonsilitis, middle-ear diseases and other infections is simply untold. It is almost safe to say that 50 per cent of the people in this audience, if they would have their teeth examined or X-rayed, would discover at the roots of at least one of their teeth pockets of these disease germs that are growing there.

How is it that they do not kill us? Because Nature is kind, as I said in the beginning. She walls off these infections; she

hedges them in and it is only when they begin to break through that we get the more serious systematic infections that we call diseases. Even though you may not have a pain in the tooth, the germs may be doing just as deadly work over a period of six months, or two years, as if they came at you more suddenly.

The lesson we get from these germs is, as far as we can search out with the X-ray or whatever other means is at our disposal, the location of the germ wherever it may be on our body. A suitable physical examination may reveal them where they are least suspected. In the examination of the teeth the X-ray is, by and large, the most successful means of discovering the germs around the teeth. It is not fool proof, but those of you who have never had your teeth X-rayed would be very much surprised, I am sure, if you had a good X-ray man X-ray your teeth, because I am almost certain that many of you who never suspected it would find that at the roots of your teeth there are those germs, which, if the condition becomes ripe, are apt to set upon you and produce more serious complications.

Slide 3—This is the germ that causes diphtheria. There is no reason under the sun why any man or woman need ever die of diphtheria. The medical profession within the last fifteen years has instituted steps that can prevent diphtheria, and any death from diphtheria in a community is a crime against the community. Auburn has not had a death from diphtheria in the last five years. Think of it, ladies and gentlemen, twenty-five years ago over 50 per cent of the people who had diphtheria were doomed. There is not a man or woman in the audience who has not had a relative in the years gone by who has died of diphtheria and yet the medical profession has perfected a means of preventing diphtheria. If the disease does become established and the physician is called early he has further means of stamping it out and preventing it. The lesson I want to bring to you is, have you taken any steps with yourselves or in your family of preventing this terrible disease? You have a means of doing it. Is it not worth while if you have not done so, to give this matter serious consideration?

Slide 4—This, ladies and gentlemen, is the germ that you have heard about, the tubercle bacillus.

Slide 5.—Here are other series of germs of the same type, tuberculosis.

Ladies and gentlemen, there are too many people dying of tuberculosis. We have today in our hands the means of diagnosing tuberculosis in our industries. We have diagnosed 85 per cent of all the tuberculosis discovered in our company. We have cut down the incidence of tuberculosis 50 per cent in the company in the last five years. We have done this by free use of the X-ray and by examinations of the chest. Tuberculosis of the lungs is one disease, fortunately, which medical science is sweeping out of the community. We are sweeping it out of the

community because we are making a more rigid search for the disease. We are paying more attention to it when it is discovered and we are protecting those about the tuberculosis patient from contagion.

In our industry we have taken about 25,000 X-rays. In one large plant of 3,000 people we X-rayed every man and woman in the company. Two per cent of the people sitting listening to me have tuberculosis. One of the best means of diagnosing it is, of course, by X-ray of the chest, We have been simply dumbfounded to find that people who apparently complain of such simple symptoms as fatigue, nervous breakdown, in reality are suffering on close examination from tuberculosis. We have adopted a routine in our physical examination toward this disease. Every person who comes to our company who is seeking employment and is 20 per cent underweight has his chest X-rayed. Also if he has frequent colds, a recent nervous breakdown, asthma, bronchitis, pneumonia, pleurisy and certain forms of rectal troubles. We have been astounded to find the number of people who are carrying tuberculosis around the community and the only sign apparently is that they are underweight.

It is not much of an effort for people to have their chests examined by X-ray, and I am absolutely certain that many people who have tuberculosis would not have the disease discovered, at least in time, unless such examination were made. The astounding thing that we know about tuberculosis is that while the normal incidence in the community is something like 2 per cent, in the residences of tubercular families the percentage runs up to 25 and 30 per cent.

In Rochester we recently unearthed a case of tuberculosis and from that one case thirty-two cases were discovered that may or may not have had their origin in the case recently discovered. In other words, the point I am trying to bring out is this, if you live in constant contact about your home with these germs you are running at least twenty-five times the chance of contracting the disease yourself that you would if you did not live in that atmosphere. In other words, ladies and gentlemen, tuberculosis is spread by contact of one person with another. The tragedy of the disease is that so many times a man hampered in his work, living in poor quarters, is not only unable to carry on and give a decent home condition to his children, but he is actually spread the tuberculosis germs to the children, so that they later become infected.

Medical science in its diagnostic methods, and in its more advanced means of diagnosis, has reached the stage where we can definitely diagnose this disease rather quickly if we will only take the pains. I have spent this time on tuberculosis because the work which we have been doing in the last ten years shows clearly that the disease is slowly being driven from the earth. The experiments which have recently taken place in Cattaraugus County

and in Massachusetts all prove that, when physicians and a community put their shoulders to the same wheel to push, tuberculosis can be driven out of a community.

Thus far I have shown you diphtheria and said to you that no man or woman in this audience need die of this disease if he does not want to. I have shown you tuberculosis, and as far as tuberculosis of the lungs is concerned there is no person in this audience who will die of this disease if he will only visit a physician who knows something about the disease. If he would spend one-fifth of the effort and take one-fifth of the interest in having a good physical examination that he does in the work in which he is engaged everyday he need have no fear of tuberculosis. Under this regime I can promise you that nobody in this audience will die of this disease, because our means of diagnosis have progressed so far and our methods of treatment are so satisfactory.

I have spent this time on tuberculosis because I have tried to emphasize its importance. I have tried to bring home to you that we are in fact winning a valiant fight against this disease and that further progress is going to be made. I wish again to point out that those who are living in close proximity with tuberculosis are in great danger of catching the disease, unless proper steps of isolation are taken.

Slide 6—This is the typhoid bacillus. These germs do not all look alike. The typhoid bacillus is another germ which is disappearing from our community. In Montreal they recently had an epidemic of 6,000 cases. The United States Public Health Service, in an investigation of the Montreal epidemic of typhoid fever, thought they were able to run it down to one man who had typhoid fever twenty wears ago and who proved to be a carrier of the typhoid germs. He worked around milk and the germs got into the milk and were drunk by the people of the city. This shows how infection may spread in a community unless proper precautions are taken.

What can those who are in industry do to prevent typhoid? In our company we have a bacterial examination not only of the throat for diphtheria, but of the stools for typhoid fever. We do this for all of the people who touch or handle food there. We have been stimulated to do this work simply because of the Montreal epidemic, because if that proved anything it proved that people with typhoid fever cannot be working around milk, or other food, with impunity. This is the lesson which many of you might bring home to your industries. Are the people who are handling the food in your industry possibly typhoid carriers? They themselves might not have the disease, but the germs may be tucked away in the gall bladder or somewhere else and from there are passed out to infect other people. If they find their way to the food you may be certain that some of the employees will contract the disease. The same thing is true of tuberculosis; the same thing is true of diphtheria and the same thing is true of

syphilis (which is the next disease that we are going to discuss). All of these diseases lead to infection.

Slide 7—This, ladies and gentlemen, is the germ which causes syphilis. You can see how different it is from all of the other germs shown. It is longer and it has these twists in it. This disease, we have found, infects about 4 per cent of the working people. It is relatively easy to diagnose syphilis. Sometimes it is rather difficult, but in about 98 per cent of the cases the blood test shows whether or not the person is infected with syphilis. This is not true in the early stages. Syphilis is a disease which in the beginning can be relatively easily stamped out. We have managed to unearth perhaps the largest number of cases of this disease of any group of physicians in our community. We have done it by taking as many blood tests for analysis as are possible, to determine if this disease were present. You would be surprised at the gratifying results. This germ has had a wonderful history and has been the cause of more unhappiness and more human destruction, perhaps, than any other germ. It has played a very conspicuous part in shaping the history of the world. Certainly four or five of the kings suffered from it, and certainly two or three of our greatest musicians died of it. One of Germany's greatest philosophers and a man who is thought to have furnished the philosophy of the late war died of it and, all in all, it has had a very colorful or picturesque history. The mental changes which it has produced in some European rulers have changed the history of the universe, and these changes sent tens of thousands of people to destruction on the battlefield because of the delusions which they produced in the minds of the reigning monarchs.

Medical science has within the last twenty-five years made tremendous strides in the eradication of this infection. Any person infected with this disease can without a great deal of effort be protected against it. I am not saying that we can cure 100 per cent of them, but certainly we can cure a great many if taken in time.

What bearing has this on accident prevention and infection? We know that people who have tuberculosis or this disease, who are not treated and who are half sick, may develop serious consequences from the slightest accident. The ground is already prepared by antecedent disease. The accident becomes the straw on the camel's back. In the beginning I said that medical science was making great progress. I have shown you the germs of typhoid, diphtheria and the infecting organism of syphilis and tuberculosis. In all of these diseases science is making the greatest strides in prevention and cure.

Slide 8—This is the germ that causes lockjaw. I am not going to spend any time on this except to say that an inoculation with the serum against lockjaw will prevent the spreading of this infection. In previous wars lockjaw killed many, many soldiers. It is rare that we encounter this disease nowadays. We have a means of preventing it.

Slide 9—You have seldom heard of a disease caused by this germ. It is the anthrax bacillus and it comes from hides. We do not hear much about it in this part of the world. Recently, however, in Rochester there was a case. In other words, the sterilization of hides and hide products is an adequate preventive measure against this infection.

Slide 10—This is the cholera bacillus. This is the germ which centuries ago swept out whole communities. In 1845 my grandfather in Rochester died from an infection of this disease. This is the germ that did it. We do not hear much about it nowadays because we have discovered its cause and know how to prevent it, and fortunately the disease is disappearing from the earth.

Slide 11—This is the proteus germ. It is very large and you will know it by its shape and by its flagellæ.

Slide 12—This is the germ that causes pneumonia. Unfortunately to date we have not made much progress against infection by pneumonia. We had hoped that we would make more progress. The next twenty-five years will see great progress in fighting this disease. Of the four different types of pneumonia at least in one type progress has been made in lessening mortality.

Eight slides that were shown here were discovered in applicants applying for work that felt they were in good health, but careful examination by the X-ray showed them to be suffering from tuberculosis. All have been sent to sanitariums for proper treatment.

This is all of the slides. I am sorry that I did not have more time to spend on showing these slides, but the light will melt the slides if I leave them on for more than a minute. This last slide is the heart of a fine-looking young chap that you would think was in perfect health. He had tonsilitis about ten years ago. He was probably infected by one of the two germs first shown you on the lantern slides. Ten years later we find his heart to be three times its normal size. This means that his period of expectancy in life is hardly five more years despite the fact that he is a very young man. This is another phase of the infection problem.

Ladies and gentlemen, I have shown these slides to bring home, first of all, a very hopeful lesson, and that is that physicians are ever increasing their diagnostic facilities. Great groups of diseases are disappearing from the earth. Certain diseases we need never have unless we want to. If we use proper vigilance we may be certain that we will not die from certain infections.

Of course in an industry that is as large as ours is we have a rather large medical department and we carry our diagnostic facilities much further than smaller companies can possibly afford to carry them. We appreciate that a smaller industry cannot use the X-ray on everybody who is hired. This, however, shows the possibilities. The slides show you the actual diseases that are diagnosed at the very beginning of employment. If you could talk to some of the people who applied for work, and who discovered at the same time that they had tuberculosis,

you would appreciate how helpful this type of examination is. We try to place all these people in sanitariums. Appreciation of all of these facts makes us all feel that tremendous advances are being made in the diagnosis of disease, in the eradication and in the treatment.

I hope that some of you will not be scared by my showing so many germs. I always hesitate to speak on this subject because people may become unduly alarmed. Many people's lives are made miserable by a contemplation of disease germs. I have tried to make this talk as encouraging and instructive to each of you as I can. I simply want to point out that we are making great progress. The battle is going on with untold millions of dollars being poured into medical schools and research laboratories, and out of these schools and laboratories are coming principles which are finding their way, slowly but surely, into industry to the dispersion of disease and to the betterment of mankind.

I thank you, (Applause.)

CHAIRMAN EDWARDS: I am sure we have all enjoyed the address given by Doctor Slater. I know I express the sentiment of the gathering this afternoon in telling him we appreciate very much his enlightening talk and his coming here this afternoon to deliver that message to us. (Applause.)

One significant thing about Doctor Slater's address is that it brings to our minds the importance of general health preservation, as well as the prevention of infections in connection with accidental injuries. It seems to me the two are correlated and that the preservation of health is equally, if not more, important to the industrial worker than the prevention of infection of industrial workers.

No doubt all of you can see that the preservation of health in itself will prevent to a certain extent industrial accidents, because those who have the disease and do not know it have a certain lowering of their vitality, which makes them more susceptible to accidents. That seems to be a simple proposition that we can all understand, and I am sure the doctor's talk this afternoon has been most instructive and most interesting and will be greatly beneficial to all of those who are gathered here.

The next speaker on the program for this afternoon is William E. Armstrong, Supervisor of Safety, Buffalo Shops of the Pullman Company. Mr. Armstrong is to address the meeting on the subject of "Prevention of Infections." (Applause.)

PREVENTION OF INFECTIONS

By William E. Armstrong, Supervisor of Safety, Buffalo Shops, Pullman Company

MR. CHAIRMAN, LADIES AND GENTLEMEN: I had expected to read my paper before Doctor Slater spoke. I had a feeling in my system that my paper should come first. However, I was very glad

the doctor's talk was along the particular line it was because we do not conflict as much as I had anticipated we would.

When I was first asked to write a paper I was given the general subject of "Infections." I see it on the program as "Prevention of Infections." While I have knitted the two together, yet at the same time my paper is general in its scope. Before I read it I want to say that I have been intensely interested in the address of Doctor Slater. I have seen considerable infection in industrial work and he has demonstrated those things to us by the slides. It gives you a better idea of the germs with which we are dealing. I am sure every one of you gained a great deal by his address here this afternoon.

The subject of infection is so comprehensive in its scope and so far-reaching in its results that it is well to give it greater consideration in our industrial life than has been done heretofore. From a casual observation it would appear there is tremendously more infection in industrial life today than at any previous time. Just why this is the speaker is not prepared to state. We only know that in the days of our fathers there seemed to be to considerable extent at least an immunity from infection, whereas today there is a great tendency for even slight wounds to become seriously infected.

Infection may be generally defined as the entry into the human body of germs that multiply rapidly and produce a toxic condition. These germs of infection in most cases may come from our own skin. They are on our hands, under the nails, in the mouth, in the nose and on our clothing. They may also come from outside agencies. It is generally conceded that infection does not develop unless there is a break in the skin.

When this break occurs the germs enter the human body and begin their dangerous work. It is not the speaker's purpose to enter into the technical discussion of infection, as that is more or less a medical subject. We shall be content to bring to your attention general items that may point out the seriousness of its possibilities.

Generally speaking every human body has been given a natural resistance or disease fighting bodies whose function it is to guard any wound and, by detroying the germs, prevent infection from developing. If, however, the resisting power of our body is below normal these germ-resisting bodies are not able to act efficiently and the germs of infection overcome them and serious results follow. It is also known that dirty clothing and unclean bodies are very conducive to the inroads of infection. It was clearly demonstrated during the world war that there was more infection among the wounded soldiers of the trenches who were compelled to wear dirty, mud-soaked clothing and to go a long time without a bath than there was among the men of our navy who had sanitary conditions, clean clothing and facilities for cleanliness of body.

All types of wounds are susceptible to infection but not to the same degree. A clean-cut or incised wound made with a sharp instrument is less liable to become infected than a puncture wound made with a blunt object. The sharp instrument is less liable to be dirty and the wound made is clean-cut, one from which the blood flows freely, thus tending to wash out any germs that might otherwise enter. In the puncture wound any dirt or germs that may be on the instrument is carried down deeply into the tissues of the body and when the instrument is removed these tissues close somewhat and the germs thus carried in are held within the body, making an almost sure avenue for infection. It has been stated that "A pin prick is a broad highway for a germ." A contused wound made by a blunt instrument presents a larger surface in which the germs may enter. This large or torn surface of the body is materially devitalized by the force of the blow and is, therefore, a dangerous condition from the point of infection.

Possibly the susceptibility to infection might be classified in the following order: Cuts, punctures, lacerations, bruises, contusions, abrasions, burns, scalds, foreign bodies in the eye, fractures and amputations. This, however, cannot be laid down as a definite law, as there are many conditions that enter into the possibility of infection. There are certain definite symptoms that point to infection and these should be thoroughly known to everyone. In the first place there is a characteristic heat about the wound with pronounced redness. Usually there is considerable swelling and pain and there may also be more or less loss of use of the infected part. A throbbing sensation is usually present, and as the infection becomes more pronounced, the throbbing and pain become more intense. When any or all of these symptoms are present prompt measures should be taken to get the patient to a physician, for once infection has developed its progress is rapid and dangerous.

There is probably no more serious condition that besets the human body than infection. As soon as a wound occurs its destructive army is on the march and unless prompt measures are taken its hordes will overcome the safeguards of Nature and serious results may follow. Infection is to injury very largely what fire is to property. It is a dangerous, consuming tyrant whose ambition is to destroy, even unto the claiming of life itself. Serious loss of use, amputation of fingers, arms and legs and even loss of life have followed in the wake of some slight scratch or pin puncture which has not been properly treated. Available records show that about 10 per cent of all industrial injuries develop infection and the cost of such infections is almost double the non-infected cost. This, of course, deals only with the monetary aspect and does not take into consideration the considerably greater suffering and the loss of limb and life as noted above. Careful estimates have shown that infected industrial injuries in compensation payments alone in the United States were about $104,000,000 per year in addition to the time loss of nearly 5,000,000 weeks. This does not take into consideration the medical and surgical

attendance. From available figures at hand it shows that the average cost of compensation for non-infected cases reported in New York State was $480.75. The average for infected cases was $897.66, or an increase on account of infection of $416.91. The average disability period for non-infected cases was 24⅔ weeks and for infected cases 42½ weeks, or an increase of 17 5/6 weeks. The total additional compensation costs in New York State for the year ended June 30, 1924, was nearly $3,000,000 and the total disability of infected injuries was nearly 120,000 weeks, to say nothing of the increase of medical and surgical costs. This shows strikingly the costliness of infection if allowed to follow industrial accidents. When we add to this enormous additional monetary cost the suffering and loss of life and limb we realize the tremendous task that is before us.

The best treatment for infection is prevention. This is a very easy matter. As in the case of fire the first few moments mean more than the efforts of many firemen, so too in injury the immediate treatment generally saves the day. Prompt washing of the wound with clean water and the application of an antiseptic immediately after the injury will suffice in the majority of cases. Wash only if you have an antiseptic to apply. Most infected cases are caused by the lack of prompt infection prevention treatment. There appears to be no reasonable excuse for the enormous loss of time and money and the tremendous amount of suffering caused by such a large number of infection cases. The speaker believes that if every industry would take definite steps to teach its employees the simplicity with which infection can be prevented and the seriousness attending almost every case of it much would be accomplished. Many concerns have proven conclusively that infection can be prevented by systematic effort. No set rule can be laid down for infection prevention because conditions differ materially in various plants. Just a few simple policies followed by the speaker in the routine of everyday life are here given, but these are merely suggestions for systems that can be developed with far-reaching results:

No new man should be permitted to go to work without having received specific warning that each and every injury, no matter how slight, or apparently insignificant to him, should be immediately reported to the plant first-aid room and prompt treatment given. Violation of this rule should be just as severely punished as any other shop rule.

Inspection should be made periodically of the hands of workmen to ascertain whether there are any wounds that are being neglected.

Just in passing I want to say that one of our foremen made it a practice to check-up on the hands of the workmen in his department, and you would be surprised at what was accomplished in reducing unreported accidents in that particular department. They found they were being checked-up for accidents that were not reported. (Applause.)

Workmen should be educated by bulletins, meetings or otherwise of the necessity of keeping the body in a clean, healthy condition, and the value of this as a protection against infection should be stressed.

Clean clothing should be insisted upon as far as possible and clothing that has become saturated with oil and grease should be forbidden.

Where goggles are issued to workmen thorough sterilization should be made of returned goggles before they are re-issued to other men. This is likewise true in the case of respirators, etc.

A thorough check-up for at least ten days should be made of all injuries to ascertain if the injured man is at work and the condition of the injury. This means much in keeping down the number of lost-time accidents and in preventing infection.

Every industrial plant, no matter how small, should provide proper facilities for rendering first-aid treatment to all wounds.

Every plant should have either a physician, nurse or some capable person, who has taken a first-aid course, ready to render such treatment.

All shop and working conditions should be maintained as sanitarily as possible.

I have not touched upon infection from lubricants because this is largely a matter of keeping the oils and lubricants free from pieces of metal and other foreign substances. If care is given to the lubricants in this regard much of the infection from such would be avoided.

I have, likewise, not touched upon the subject of eye infection because all such cases should be treated by a specialist or some one who has made a definite study of this exceedingly important organ. The eye is of such tremendous importance to human life that it should not be tampered with in any case by anyone who is not thoroughly conversant with its every detail. We shall always urge the use of goggles in the industrial plant as a preventative of eye injury and, therefore, as a preventative of eye infection.

In conclusion let me urge upon everyone of you a thorough study of this vital subject. Let me urge the formulation of a systematic plan to guard against the seriousness which follows in the wake of neglected injuries. Let us gird ourselves to the task of not only practicing a careful and systematic prevention campaign, but let us endeavor to bring to everyone, whenever the opportunity presents itself, whether at home or at work, the message of safeguarding the human body from the inroads of death-dealing infection. (Applause.)

CHAIRMAN EDWARDS: I want to express thanks and appreciation to Mr. Armstrong, to whose address we have just listened. It was a most interesting address, coming after that given by Doctor Slater and supplementing that, as it dealt more particularly with infection following injury in the shop.

It seems to me that what we need to get, not only in the mind of the employer in the average industrial establishment, but also in the minds of the employees, is that, once we have an injury which has broken the skin anywhere on our anatomy, the germs which we carry around with us which may be in our clothing, on the materials we use in our work or on the tools that we use, have a habit, like some of our antagonists, of getting under our skin, and it is at that time that they begin to do their damage. Once that happens then the thing to do is to take precautionary measures and not think it is trivial. We should report even the slightest injury to our superiors so that there will be available for us such first-aid treatment as they may have at hand and that there will be opportunity for applying the remedies which may prevent, and in most cases do prevent, infection and the spread of infection. That, to my mind, is a most important thing.

I take it there is nobody here who has not had some contact with industry and with employment to such an extent that he does not know the alarming results in human suffering and cost, both to industry and employees generally, resulting from infection from trivial wounds. I think we can take these lessons home with us and spread them to our associates and our fellows wherever we may go so that it will do the greatest amount of good possible. (Applause.)

The next speaker on the program for this afternoon is Col. J. P. Jackson, Director of Personnel of the New York Edison Company, who will speak on "Electrical Safety." (Applause.)

SAFETY RELATIONS OF ELECTRIC POWER

By Col. J. P. Jackson, Manager of the Personnel Bureau, The New York Edison Company

MR. CHAIRMAN, LADIES AND GENTLEMEN: I showed some pictures this morning which may be more or less of an introduction to my subject; but before proceeding with the topic assigned for discussion the speaker desires to compliment Commissioner Hamilton and his staff of the New York Department of Labor for the strong influence they are exercising for the promotion of safety. The annual conference we are attending today represents but one of numerous methods which the Department has used in this beneficent phase of its work. Among other activities deserving support is the work which has been done in developing an accurate and reasonably comprehensive system of accident reporting, analysis and tabulation; the studies which have been made of industrial safety and hygiene, and the presentation of the findings to industry; and the promotion of friendly cooperation between the Department and industrial plants in a way to promote effective coordination of action by all interested in the reduction of accidents. I believe no other State in the Union has exceeded New York in helpfulness in that way. (Applause.)

ELECTRICAL SAFETY

This paper deals primarily with the relations of electrical power to problems of safety, with emphasis given to its use by manufacturing plants and by the public. The generation and distribution of electrical power to consumers is a technical problem in large part affecting only the welfare and safety of the quarter of a million or more employees who are in this country connected directly with the electrical industry.

The electrical power industry is still very young as viewed from the standpoint of the history of civilization. It began in 1882, with the opening of the Pearl Street Station in New York City by Thomas A. Edison. Nevertheless within this short time electrical power has come to be used directly by a substantial majority of our people for lighting, driving motors, or the use of other appliances, and practically every one in America receives benefit from this service in one way or another. The United States Geological Survey reports that more than 73,000,000,000 kilowatt hours, or nearly 100,000,000,000 horsepower hours of electrical energy, was generated in 1926. This enormous amount of power was produced, distributed and utilized with a relatively small list of fatalities and injuries.

Work Shops

Census figures for the year 1925 indicate that about 75 per cent of the power used in the shops in this country was electrical. This form of power doubled between 1914 and 1919, and has since continued to grow in use rapidly. The National Industrial Conference Board states that in 1927 the total primary horsepower used by manufacturing industries which reported to the Census Bureau was over 35,000,000 horsepower. Of this electrical motors aggregating almost 16,000,000 horsepower in capacity—a figure which is growing with relative rapidity—were driven by power purchased from central stations, while something over 10,000,000 horsepower of capacity was driven by current from isolated plants.

The great growth in the use of electrical power in manufacturing establishments results largely from the possibility of applying it to almost any location in a plant with comparatively little expense and difficulty; from its flexibility, which enables machines to be controlled with a nicety impossible where mechanical power devices alone are used; and from the possibility of providing effective illumination in the workplaces. These three primary advantages have greatly improved the ease and safety under which manufactured production is obtained. Indeed, the application of electrical power has been a primary element in making possible the great development of mass production, large productivity and high quality—with a minimum of waste—which marks America's industry today.

Electrical power in the shops has been responsible for the removal of innumerable hazards, which would have resulted in an awful toll of accidents had industry developed to its present

magnitude with the use of mechanical power alone. Thus, with the introduction of electrical power, miles of shafting and belts and innumerable gears, clutches, etc., have been displaced, and with them went great hazards to life and limb. The use of electricity, with its associated magnetic properties, makes possible the control of the power used for driving industrial machinery not only with assurance and delicacy, but at any number of points, nearby or remote, as is well illustrated, for instance, in the great modern newspaper presses and in much apparatus used for handling materials. This possibility of multiple points of control is an especially valuable adjunct to safety in large, complicated trains of machinery having many movements, or that which may be best operated at a distance. The use of electrical illumination has been most effective in the prevention of accidents in shops because of its ready use for providing satisfactory general lighting and because it can be applied intensively to specific points on apparatus where work is being done.

Another important element which has made the use of electrical power helpful, from the standpoint of accident prevention, is the fact that it has reduced human fatigue in industry. Experience indicates that fatigue is a prolific cause of accidents. It is estimated that shop workers have available today for their use about four and one-half horsepower each; this represents many times as much as a man can exert by the use of his muscles, and it can be put to work by touching a button or throwing a switch. As a result in a large proportion of our present-day industrial operations the man becomes a director of power rather than a source of power, and he performs his day's work with much less fatigue than was possible half a century ago, when a larger percentage of our industrial and construction operations were perforce carried on by the use of man-power alone.

Though not specifically dwelt with here, it should be mentioned that in mines, quarries, and most other workplaces the use of electrical power has made possible a reduction in accidents which more or less parallels that in workshops.

The Home

In the home replacing the kerosene lamp by electric light has removed a hazard which was a common cause of fire and of accidents resulting from fire. The use of effective illumination has also been equally helpful by making possible the proper lighting of stairways, attics, cellars and other places in the house which have been prolific sources of accidents. Electric lights, electric household appliances and gas for heating and cooking have eliminated drudgery in the home as effectively as the electric motor has relieved the old-time drudgery in the shop. A similar comment can be made with regard to our office buildings and places of commerce.

The Highway

Probably second to no other advantage in the use of electric power has been adequate electric illumination of our streets and highways. In the old days when those going out on a dark night were compelled to carry a candle lantern, or later a kerosene lantern, the hazards they faced were great. This was much relieved in the cities by the adoption of gas street lighting, but with the coming of high-power electric lamps in our city streets, and their use extending further and further along the main boulevards into the rural districts, the safety of the road at night has been increased enormously. Of course, with the astounding growth of the great new automobile industry the hazards caused by traffic have increased greatly; but here again the use of properly shaded and efficient electric headlights and the widening and improved general illumination of our streets and roads having created counter safeguards without which modern heavy automobile traffic at night would be dangerous and difficult.

On the Farm

Many farms have been electrified. In this case the greatest remover of hazards to life and limb has been electric light, though advances have been made by the adoption of electrically driven, easily controlled farm machinery which has reduced farm hazards and accident-breeding drudgery. The electric power industry is today putting forth its best efforts to extend the use of electric power on the farm, and with the growth and inter-connection of electrical distributing systems, which involve the building of numerous long transmission lines through rural districts, farm electrification is becoming more and more feasible. The electrical farm load in California is now a substantial part of the central station business of that State, while in New York and other States it is becoming an element of mounting importance. Statistics from the National Electric Light Association show that there are something more than 227,000 electrified farms in twenty-seven States, including New York, which has 35,600, counting only those that obtain their power from central stations. There are others which use isolated plants of their own.

ELECTRICAL POWER PROTECTION

The electric *currents* of power systems usually flow through metallic "conductors." To protect them from leaking into paths for which they are not designed the conductors must be supported and covered by non-conducting materials called "insulators." Thus, the high voltage wires on the poles or towers of transmission and distributing lines are usually supported by porcelain insulators, and the low voltage wires within a house or shop are covered with rubber and a braiding of cloth soaked in resinous or pitchy compounds.

Indeed, the insulation for electric wires to-day is given the utmost attention in order that it may be substantial and restrain the electricity to the paths for which it was designed. This careful application of insulation prevents the power from leaking into the wrong channels, where it may be converted into heat and cause fires. Such insulation and various forms of barriers also serve to prevent people from coming into direct contact with electrified wires and appliances. This latter protection is important since the human body is a reasonably good conductor of electricity, and if it comes in contact with a live wire, it may form part of the conducting path through which current may flow with the resultant danger of shock and injury.

The danger of electrical power to the human being is more or less dependent upon the electric pressure or "voltage" of the electric circuit, just as the injury which may be inflicted by a material object is dependent upon the force supplied. Thus, a man falling under the wheel of a heavy truck will almost certainly be badly crushed, and likewise a man touching a high-voltage electric transmission line is apt to receive a serious shock. On the other hand, though a person who is hit by a bicycle may be seriously injured, the chances are he will escape without hurt; and similarly a person may ordinarily touch the low-voltage lighting circuit of a home or a shop without receiving a serious shock which will do injury; but in either case there is always the chance that the conditions may be such as to cause serious results.

This being the situation the electrical industry takes precautions to locate and protect high-voltage lines and equipment so that only skilled, experienced men appointed for the purpose can go near them, and then only under safe conditions. In shops and residences where the voltages are low the wires ordinarily are carried in conduits which are beyond reach, or, where such arrangements cannot be made, exposed wires and appliances are insulated in such a way that contact cannot be made with the metal conductors themselves.

One of the reasons that accidents seldom happen to people when they touch the low-voltage wires of houses and shops is because the contact is commonly made when the man is standing on a dry floor or other reasonably good insulating medium. In this case the current is prevented by the floor or other material from leaking from the wire through him to the ground. On the other hand, if the man is standing in a wet place or on a floor of metal a good contact to the ground may be made through his feet and he may receive a comparatively heavy current. For this reason wiring and appliances in wet places or near metallic or conducting materials, which are in contact with the ground, are given special insulating protection.

In shops or houses burns sometimes result to amateurs or untrained workmen, when making repairs, from the careless placing of a metal object, such as a screw driver or a pair of pliers, across

uninsulated parts of a circuit without having disconnected it from the source of power. This causes a "short circuit" of low resistance across which the voltage of the system may force an abnormally heavy current. This current may heat the metal object and wires near the points of contact to incandescence and may even melt them, or it may cause an electric arc. However, all circuits or branches of a circuit such as the wiring in a house are automatically freed from the sources of electrical power when a short circuit occurs, or the wires are otherwise overloaded, by "circuit breakers" designed and installed for that purpose.

In dwellings these circuit breakers are commonly short wires, easily melted, called "fuses," inclosed in a connecting "plug," which is connected into the wires of the circuit of the current and break the circuit by melting when more current flows than is safe. On circuits carrying heavier currents, such as some of those in shops, a magnetic device is used to open the circuit by pulling apart special contacts, which are in series with the circuit. The latter usually have handles so that they can be operated by hand. Many circuit breakers—commonly called "switches"—are not automatic and are worked only by hand to open or close a circuit, such as the button switches for the lighting of a living room, or the switch at the place where the electric wires enter a dwelling. When a circuit is isolated from the source of power, by switch or otherwise, it is said to be "dead," and when not so isolated it is "alive." It is seldom necessary and always undesirable to work on a live circuit.

ELECTRICAL UTILIZATION

At the lights and appliances in residences and stores the voltages are low, commonly about 110 volts, and in shops 110 to 220-or-so volts and the wires, switches and other controls, and the electrical parts of shop machinery itself are all carefully insulated or protected in a way to make accidental contact almost if not entirely impossible. However, accidents do occur now and then, especially in shops, though they can be avoided entirely by reasonable precautions. Compliance with the following conditions is most essential for shop safety:

1. The wiring and motors should be of acceptable quality and should be installed in the proper manner. The installations should be inspected and approved by a representative of the Board of Insurance Underwriters.

2. Workmen employed upon the maintenance of electrical equipment should fully understand their work and how to avoid hazards.

3. Persons using electrically equipped machinery should have carefully explained to them the methods which should be employed, and the dangers which may arise from improper acts. They should be as familiar with the electrical hazards of their equipment as they are with those of the cutting tools and other appliances.

Available statistics show that the largest number of accidents

of an electrical character in shops are caused, in their order of importance, from the following:

1. Negligence such as carelessness, heedlessness, and more particularly absent-mindedness on the part of the worker.
2. Employment of untrained men for repair work.
3. Failure of those using electrical apparatus to learn the proper method for using it and how to avoid dangerous practices.
4. Use of unsafe materials and appliances and poor installations.

These causes of accidents are similar to those which result in other phases of industry, and as in all industries, the first one named is much the largest. To reduce this first class of accidents—negligence—requires proper safety organization and safety instruction for the same general character as is required for the reduction of other types of industrial accidents.

One special element in the installation of electrical equipment which is worthy of mentioning in this connection is the desirability of grounding metal frames of stationary apparatus which contain electrical conductors. By this means if the conductors in the course of use come in contact with the frame of a piece of apparatus they are brought to the same voltage as the ground and persons touching the frame will not receive a shock. If such grounding is not done the frames may become electrified in the case of faulty insulation, and danger may result. It is now the practice to carefully ground motor frames, transformer cases and other metallic parts of stationary electrical apparatus as are not normally intended to carry current.

In an electrified house today are to be found portable lamps, toasters, coffee urns, sweepers, washing machines, etc. Many of these articles are attached to the lighting circuits of the house by means of plugs placed in receptacles in the wall, from which flexible cords lead to the appliances. When the appliances and cords are of approved design and material, and in good condition, there is no danger of either fire or electric shock; but there are appliances and cords on sale which are not approved and which are distinctly dangerous. The insulation of a poor electric cord is apt to be thin and brittle. Therefore, after use the insulation may break down and the wires get together with the result that a short circuit is caused, which in turn may set the cord on fire and possibly the house; or the wires may have become bare, with danger of shock to the person using the appliance. Further, poorly made electrical appliances may have their electrical units improperly insulated from their frames in such a way that the latter may come in contact with the live circuit. In this case a person using the poor appliances may receive a shock, and if he happens to be standing in a very wet place the shock may be serious.

Therefore, it is desirable for all who use electrical appliances to purchase only those which are approved by someone having adequate knowledge of the subject, such as experts in the light and power business. The users should carefully observe the condition

of the apparatus from time to time; if a flexible cord shows signs of fraying or breaking of the insulation it should be replaced, and if an appliance gives indication that it is out of order, by not working properly or by causing a shock, it should be sent at once to a competent repairman and put in proper condition. Under no circumstances should untrained persons, either in houses or shops, or elsewhere, endeavor to repair wires or apparatus connected to live circuits. In both shops and residences, if for any reason temporary circuits are required, they should be installed only by qualified persons who are trained for this work. Likewise inexperienced persons should not put fuses of larger current carrying capacity into a circuit than that for which it was originally rated. Failure to comply with these last two injunctions has often caused trouble.

ELECTRIC POWER SYSTEMS

When electric power systems began with the opening of the Pearl Street Station in 1882 comparatively little was known of the requirements for insulation and of the hazards to human life, but the voltages were low. However, the work of developing safely insulated systems has progressed steadily as the industry has grown, and with the introduction of alternating currents and higher and higher transmission voltages modifications have been made to meet the changing requirements. This work has been so effectively carried on that the electrical industry, although dealing with enormous quantities of power, has a surprisingly small number of accidents in the ranks of its own quarter of a million workers. When it is remembered that electrical power normally cannot be detected by the senses of sight, hearing or smell, and is transmitted at high voltages to points of distribution—where it is reduced for introduction to customers' premises—the electrical industry is to be commended for the fact that its accident frequency, as shown by a recent canvass of a large number of industrial establishments, is lower than the industries of mining, woodworking, packers and tanners, construction, paper and pulp, quarries, and even metals.

Furthermore, the industry in the last three years, in accord with the statistics of the National Safety Council, has been reducing its accident frequency. As an illustration of what is being done in the electrical industry one large corporation in the course of about two years has more than halved its frequency and severity rates and other corporations are doing equally well. It might be mentioned in this connection that most of the accidents which the industry experiences are of a mechanical rather than of an electrical character.

The excellent record that the industry has made in the past in safeguarding its own employees and the public, and the improvements which are still going on in accident records, have been accomplished by careful, scientific and practical study, with a view

to eliminating hazards and providing safeguards and safe practices, and also by the creation of effective safety organizations among its own employees.

The safety organizations are in essence similar to those in other industries, including the central, departmental and workmen's safety committees; the use of posters, safety meetings and other educational mediums; and supply to the workman himself of every facility in the way of goggles, rubber gloves, protectors for live circuits, insulated tools and safe-working appliances of many kinds. As a rule workmen are not permitted to work on electric lines while attached to sources of high voltage. Careful and exhaustive tests are made to be sure that lines on which work is to be done are dead, that instructions for work upon the lines are checked and followed explicitly, etc. It is largely because of these carefully developed precautions that electrical injuries are relatively so few in number.

The industry has long been engaged in preparing and maintaining adequate safety rules. Today there are two effective standards bearing upon electrical safety. One is the "National Electrical Safety Standards" and the other the "National Electrical Code" of the National Fire Prevention Association. Both of these have been approved by the American Engineering Standards Committee. From these standards individual electric companies abstract the rules necessary for their purposes.

Earlier it was noted that in the electrical power industry, as in shops, by far the greatest number of accidents occur through negligence, and it is to combat this difficulty that the industry is today devoting much of its time. The work has met serious obstacles here as elsewhere from the attitude of the "hard-boiled." This condition caused the *Electrical World* recently to make this statement: "It should be remembered that a great many of the men in the electrical industry who are most liable to accidents take a certain amount of pride in being 'hard-boiled' and it takes 'hard-boiled' methods to make them take care of themselves." The difficulty of the "hard-boiled" is quite common throughout all industry, but the ice has been broken in the electrical industry and its entire group of employees and supervisory officers are now quite unanimously at work to overcome, by education and all means available, the human weaknesses that are prolific in producing accidents.

THE PRONE PRESSURE METHOD

Although the electrical industry has been giving most of its attention to the more important problem of prevention of electrical accidents, it has also been devoting itself to the problem of resuscitating those who have stopped breathing because of electrical shock. Today throughout the country practically all electric light and power companies formally teach their employees the Schafer Prone Pressure Method of Resuscitation, and through this means scores of persons who have been shocked to unconsciousness have been

restored to life; and the electrical and gas industries have been foremost influences in obtaining a wide adoption by the Government and other important agencies of a uniform manner of applying this method.

The method includes, in essence, laying the victim upon his belly and pushing upon the small of his back in a rhythmic manner so as to produce artificial breathing. In many cases the victim of the shock has had his breathing apparatus paralyzed and, by means of this artificial breathing, oxygen is furnished to the blood until the patient is able to breathe of his own volition.

The electrical industry is using its offices to aid in having the police of the country, the firemen, all connected with hospitals and others taught the Prone Pressure Method. Undoubtedly it should be taught in all of our shops and particularly to those who are working upon the maintenance of electrical shop equipment or using such equipment. Indeed, everybody in the country should be able to use it. The New York State Department of Labor is aiding greatly in this work by having had prepared motion picture films which pictorially show the Prone Pressure Method as it is used for electric shock, asphyxiation, drowning and other accidents where respiration is suspended. Any industrial company desiring this film can undoubtedly get it by applying to Commissioner Hamilton in New York City or to Doctor Cofer, the head of the Bureau of Industrial Hygiene of the Department of Labor.

In addition to teaching the Prone Pressure Method the industry is also more and more instructing its employees in other elementary forms of first aid. This instruction is an important adjunct to specific safety training, as it impresses upon the employee the seriousness of accidents.

CONCLUSION

From the foregoing statements the following conclusions may be reached: First, that electrical power has been an unexcelled medium for the reduction of accidents and has made possible America's present large and efficient production; second, that electricity can be applied to the shop without fear of accidents when suitable materials and apparatus are used in the installation, and the employees using them are properly trained; and, third, that electricity improves the safety condition of the home or farm and may be used without fear of accident if the wiring and appliances are approved, and if the occupants of the houses or farms give reasonable attention to see that their apparatus is kept in proper condition. (Applause.)

Finally, I believe the electrical industry would authorize me to say that all of us, employees and Management, are cooperating with Commissioner Hamilton and his staff in their great humanitarian work of accident prevention. (Applause.)

CHAIRMAN EDWARDS: On behalf of those present at the session this afternoon I want to extend our thanks and appreciation to

Colonel Jackson for the excellent address he has given. I am sure it is well appreciated and it has been most interesting, particularly to those here who are in some way engaged in the electrical industry. However, it goes farther than that. In this age, which we might call the electrical age, it brings right home to us many problems with which we are concerned in our own domiciles. There is hardly a home today that is not equipped with a number of different electrically operated machines or devices of some kind, and it behooves us in the handling of such apparatus to be careful to guard against accidents by means of either shock or burning or something that goes wrong with the wires or with the switches or some of the other parts of the apparatus.

There is a point that Colonel Jackson made which is very significant to me, that what is necessary to prevent accidents in the electrical industry, in addition to all of the safeguards that may be provided, is that those who have to do the work should be well-trained men. That is of the utmost importance. There is no doubt that in connection with the electrical industry, as well as a good many other industries, a great many of our accidents are due to the fact that certain employers will for various reasons engage and entrust to unqualified workmen dangerous occupations.

Another point that Colonel Jackson made, and I think it applies to all workers in general, is that certain people seem to hold a contempt for protective measures designed to prevent accidents and injuries. As he said, they are hard-boiled. We have all seen that. First, it seems to me that danger of accidental injury lies with the younger generations because of their desire to flirt with danger. Secondly, on the part of the older workers, because they think they are beyond the possibility of accidental injury. That state of mind, of course, can only be eliminated by education, and, as I stated at the opening of this afternoon's session, a great deal of good can be done in this general work of accident prevention by means of education.

We have nothing further on the program for this afternoon, except what may come up under the head of general discussion in connection with the addresses that have been made this afternoon, or subjects that have been dealt with by other speakers, or anything else in connection with the general subject of accident prevention.

DISCUSSION

W. P. COSTER (American Sugar Refining Company): The question of infection is a big one. I wonder if this assemblage would be interested in what work we have been doing along that line? As everybody here knows, the manufacturer of sugar deals with a chemical compound. A little sugar and a little water at a proper temperature give you fermentation. Fermentation on a little cut on the hand goes a great way toward infection.

About seven years ago we tackled the problem. We installed a first-aid station. We put in a doctor and a nurse, and where we

used to have anywhere from twenty to twenty-five very serious infections a year, bringing on all sorts of things, for this year we had only two infections, and one of those came about through a man using a mallet constantly in his work and causing a callous to form on his hand. He got a slight opening in the callous, a little sugar and water went in there and he got an infection.

I cannot of course emphasize to this body as well as Doctor Slater and Mr. Armstrong the importance of having employees report to the first-aid station immediately when receiving even a slight scratch. Our problem, I think, is more difficult than any other industry, inasmuch as we employ from 75 to 85 per cent foreign-born workers. It is a condition that all refineries or industries of that calibre are up against. Notwithstanding that, I think we have made remarkable progress in bringing home the educational factor to that class of employees. If we can keep it up and bring that home to such employees I think the question of infection among the higher type of employee should certainly be easier.

I came here to try to get some points on the prevention of accidents and I certainly am filled up—in fact, I am just overflowing with information which, when I bring it back, will be of much value to our industry. (Applause.)

COL. J. P. JACKSON: May I ask a question? There is something that I am very anxious to have answered. The doctor is beside me and there are probably skilled doctors here who can answer this. Suppose you have several gangs working out on a piece of work some distance away from medical stations. They have a first-aid kit with them, they probably have iodine or mercurochrome and bandages and all that. A man gets a bad cut. It would take from ten to thirty minutes to get the man to a doctor's office or a medical station. How would you advise handling that case?

I appreciate the fact that the Bell Telephone Companies train all of their men in first aid. They have to do that because in some cases, as they are out in the country, it takes a day to get to a doctor. In some of our manufacturing establishments that are close together it does not take an employee more than five minutes to get to a first-aid station. What is the desirable thing to do with the in-between cases where it takes longer to get to a doctor and they do have a first-aid kit with them?

DR. B. J. SLATER: If a man has a first-aid kit with him I assume he has either iodine or mercurochrome, or some other antiseptic. Equally important, and to my mind much more important, is the fact that he should have some sterile gauze. Pour the antiseptic on the wound and put the sterile gauze over it and make a bandage. If he has done that he has done enough. He should do it properly, of course. If he has water there he can wash off the wound with the water and afterwards put on the antiseptic. If he has no water, pour on the antiseptic, put on the sterile gauze and then put a bandage over it. I think then he has done enough.

COLONEL JACKSON: Suppose the doctor is fifteen minutes away, would it not be better for them to take the man to the doctor?

DOCTOR SLATER: I do not think you can do much harm with the iodine or mercurochrome. I am absolutely certain you can do nothing but good with the sterile gauze and bandage. If you do no harm the quicker you get at it and keep the germs out the better. The germs will get in in a minute or two. After all, unless there is a tendon cut or bones broken, that is all the doctor does when he gets the case.

I would like to emphasize one point, that is that putting on antiseptics is never enough. It is scarcely more than 50 per cent of enough. Be sure to put a sterile dressing on and an absolutely clean bandage after you put on the antiseptic. I would be perfectly satisfied to treat almost all of the minor injuries without antiseptic but just flowing water if I had a sterile gauze to put on immediately after that, because if the parts are pulled together and a dressing is put on they will heal at once.

The physician when he takes out an appendix does not put any antiseptic on right after the appendix is taken out. After he has made the incision he puts a sterile dressing on it and never uses an antiseptic. The sterile dressing keeps the germs out. (Applause.)

G. S. RAVEN (Employers' Liability Association Corp., Snyder, N. Y.): I have attended several of the Congresses and I think we agree that they are of considerable benefit. That is what we attend them for, to get as much benefit as we can from them. I was especially interested in Doctor Slater's talk in regard to infections. It is my contention that infections are carried in different ways in one person than they are in another. Those germs are not entirely in our blood until they have some means of getting there. Most of them in a good many cases are carried there from contact through the hands, etc.

If I were to ask the members of this Congress how many of them ever ate in a hotel dining room or a restaurant I venture to say there would not be a person here who could say he had never eaten in a hotel dining room or a restaurant. I think a good many of you may have been in the kitchens of these places—probably some of you have been in more of them than I have. I have been in hundreds of them.

Doctor Slater said that in their plant they made a thorough inspection of those working in the restaurant. I have been in restaurants all the way from Canada to Miami, Florida, and I have been in a good many of the kitchens of those restaurants. I wonder how many of the people know the things they eat and the chances they take day after day? If we go down in the lower parts of the city and eat in some cheap restaurant we expect to get some kind of sickness. If we did get it we probably would not go there any more. But you do not have to go to those places; you can go to the best restaurants and hotels anywhere in the country and find the same thing.

The nicest kitchens are put in front, where they fix up the things and where the men and girls are dressed up in white and are nice and clean. But do you know the class of people who do the dishwashing and mixing of some of the things back out of sight?

The Board of Health inspects the kitchens and bakeries in these different places to find out what kind of material they have in there and if the floor is clean, and a few things like that.

I have been in some restaurants of the best kind and the water they used for dishwashing looked like they had scrubbed the floor with it. They used it forty times over and after that it did not look like water to me. That is not the only thing, but the class of men they hire is terrible. I have picked up some of these fellows and given them a ride. One fellow told me that he worked in a restaurant in New York in the winter time, but could not stand it in the summer because it was too hot. I wonder how many of those fellows if they went to get a test could get insurance? I do not suppose very many of them would pass an examination to take out insurance. I wish we were sure what percentage of those fellows if examined by Doctor Slater could go back and get their jobs. Do you know that most of those men get there because they cannot get any other kind of a job? They are either crippled or deformed or something like that. The best girls and the best men and the cleanest and neatest ones are out in front, where they deliver the material. If they would put the kitchens in front of the places and put the dining rooms in the back part there would not be nearly as many people eating in restaurants as there are at the present time. I am not "knocking" the restaurants or hotels or anything of that kind. However, I have been in many of them, some of the best, and I tell you, you do not know what you are eating and drinking.

It is just like the three men who were going to a house to paint it. It was a nice residence. The lady of the house thought she would have it redecorated. They told her they had to have alcohol to mix with the paint.

The lady remarked: "I do not know whether I have any in the basement, but I will go down and see. How much do you want?"

They said: "About a gallon."

"The thing they wanted to use it for was to mix it with something and then drink it, because they knew she was going out to a bridge party in order to get away from the mess and smell.

She said: "I think I have some alcohol, but it will not amount to a gallon."

They told her that would serve the purpose. She went out to her party and spent the afternoon there. When she came back she said: "I have worried all afternoon about that alcohol because I thought it might not be successful. Did it work?"

"It was fine; there was nothing the matter with it; but why did you worry about it?" they asked.

"Because I washed the dog in that three times and I thought it might not work very good." (Laughter.)

The idea I want to bring out is that we ought to have a change in the different rules or else there would be no use having Congresses. My idea is that the doctors would not get as much business if there was not as much sickness as there is, but the people who are not interested in the prevention of sickness are those who do not care about it. My idea is that if we live long enough we will see the time when there will be inspectors, and it will be compulsory for a person to be inspected before he can wash dishes or mix the food. That examination will be like the one Doctor Slater has described which they give their men in the restaurants of the Eastman Kodak Company. (Applause.)

FRED GAA: We have talked a good deal about microbes and germs. That reminds me of a doctors' convention where they were talking about microbes and germs. Then they went into the Pullman car. The porter came along and wanted to dust them off. One doctor said: "No; the porter will brush all those germs all over the air; then we will have to inhale them and get an infection."

The porter said: "Never mind, the little brushing I do won't disturb the germs." (Laughter.)

This afternoon we have talked a great deal about infection. That goes into industrial hygiene, which is a mighty factor in the prevention of accidents. We have learned about light and what effect it has on a man's eyes and how far it goes toward minimizing accidents. We know if we have not the lights shaded that gives eye strain and consequently you get a headache and are more liable to accidents. An individual light brings the light in its proper place on the tool you work with and minimizes accidents. We know that uniform temperature in the workshop, good heat, and all those things will have a great deal to do with this question. We should have benches or seats for women. When a woman stands all day at a machine she gets varicose veins.

All those little things help to increase injuries in the workshop. Therefore I am glad that some of those points were brought out this afternoon, because industrial hygiene and prevention of accidents have to work hand in hand. (Applause.)

EDWARD J. EHRHARDT: Mr. Chairman and Gentlemen:—As a representative here of the Enterprise Association of Steamfitters in the City of New York and Vicinity, Local 638, I wish to state a few of the most important factors in the course of building construction. The general mechanic is always on the verge of expecting an accident. I want to state that on most of our constructions practically all of them go up without any protection. Any falling object would be apt to strike anybody working below.

Then the building goes up and they start to pour the concrete and put up the forms and one thing and another; then after the forms are set for some time, the laborers go along and rip these forms down, and they lie across the floors for weeks. There are

nails in these forms and the mechanics can step on these nails. In nine out of ten cases that will happen in a building.

From my experience of the last twenty-five years in the building line as a steamfitter, on any job where I have been a foreman, and that is quite a few, I have always made it a practice to keep a first-aid kit on the job. It is a wise thing to have iodine or mercurochrome, and above all have a bandage. It helps a man wonderfully in so far as it gives him a chance to reach a doctor. That is one of the first things I do, send another man with him, or go myself if the doctor is near enough. Most every employer has a compensation doctor.

I do not want to take up too much of your time, but I would like to state also that I warn the men time and again if they see a piece of discarded lumber with a nail in it to take a hammer and hammer it down so that nobody will meet with an accident.

Another thing that exists in the building trade, especially in the newly constructed affairs, when material is brought on the job it is strewn all over the place and you have to duck between brick, boards and skewbacks and everything else to get to the operation on which you are working. Sometimes the skewbacks are laid in such a way that they will tumble and fall, and in cases of that kind men injure their feet or hands or other portions of their bodies.

There is a condition existing in New York where we have what we call "shoestring employers." I would not call them contractors; they are not worthy of the name. They want speed, not efficiency, and they are lowering the standards of what our master employers have tried to raise to the highest point and have been doing the best they can in that respect. Then along come these men and lower it to the lowest grade. I might say that that condition exists because there is keen competition of trade at the present time. They figure things so closely that I do not see how they ever get away with it. And besides that they pay salaries in excess of the union wage by $1 to $2 or $3 a day more. The only way I can figure that out is that they do not give the workman a thought at all in as far as accidents may be concerned. I hardly think they know of insurance, because there have been many cases where they have not been insured, and the poor employee who is injured is left in the position where he leaves his family or his mother, or whoever is depending on him, nothing to depend on. If that condition could be eliminated in the City of New York and the master employer performed the majority of the work then I think we would be better off. At least the master employer has tried to do everything in his power and urges the men to be careful and have them use the best judgment they can, for after all a life is a life and there is nothing like taking care of yourself while you have the presence of mind and the opportunity to do so. (Applause.)

CHAIRMAN EDWARDS: Are there any others present who desire to take part in the discussion?

WILLIAM N. KRAUSER (Wilson Foundry & Machine Company, Pontiac, Michigan): I never lose an opportunity to promote safety education. I have no other reason for getting up now. One thing that I think we misunderstand, and that is a thing Colonel Jackson has brought out—the hard-boiled man or supervisor. Are you not afraid that you and I have the wrong conception of him? Have you ever been a superintendent or a foreman or a supervisor? If you have you know this hard-boiledness is merely a matter of scenery that is put on. The man who is known as hard-boiled is as safe as you or I. He has a heart and brains and he is sympathetic. But in his position he has to build up a line of scenery that says "No." If he did not he would have one line of men constantly in his office asking for a raise in pay, and he would have another line of men who would want a drinking fountain there and there and there. If he did not build up that scenery most of the time he would be taking care of things of that sort.

He has to do that or he could not refuse these men when they came in. I am afraid that is the trouble with our average safety man. He has an opinion that his superintendent and supervisor is hard-boiled. He goes to the office with the best of intention and his mind is all made up. He takes a look at the superintendent and sees that there is a scowl on his face and says, "No, he is not in good humor; I better put it off."

That is just a thought I want to convey to you. Do you not think we have the wrong conception of any person being hard-boiled when it comes to accident prevention work? (Applause.)

C. J. SOULIER (Landon Radiator Company, Inc., North Tonawanda): We have heard several subjects on sanitation. To begin with there are a great many of the industrial concerns right here in this neighborhood who have unsanitary conditions and they do not seem to relieve the men, especially the foreign element. The foreign element have to be educated by these men who understand English and can teach each of them, either by telling them or by signs.

There are a great many cases where sanitary conditions are "fierce," if that is what you want to call them. The toilets and the washrooms are unheated; they are all in close quarters and have no refuse pails. In the general office they have a nice heated toilet and a nice washroom. The people in the office can take care of them. They think that in the plant a foreigner does not need that because he does not live in sanitary conditions at home. They do not therefore lay much stress on the care of them.

We all know that disease is bred in filth and that is where you find the germs. A man may go around in the morning and clean the washroom, but in a matter of a couple of hours you will find it all strewn with paper and there is dirty water in the wash-bowl. Why do they not tell their employees by signs or personally how to keep them clean? You will find that condition in nearly

all of the plants. I have seen many plants where I did not work but that I visited for certain reasons, and I have noticed that in 80 per cent of the industrial concerns in Buffalo, especially in the foundry lines, the men, especially the foreign element, are not taken care of properly in the way of sanitary conditions.

I think it is easy enough to tell those people about this. Their children go to school and they learn of these things and can tell their parents. Some of these foreigners go to night school and can be educated in sanitation. If we got together and kept right after these men and posted the proper signs probably they would be taken care of a little better in that respect. They would look out for themselves and try to prevent unsanitary conditions. (Applause.)

W. F. BERG (Representing Plumbers' Union No. 418, Queens Borough, New York City): Mr. Chairman, Ladies and Gentlemen:—The Chairman in his opening remarks this morning said we were getting food for thought. We open these sessions with prayer, and according to the sincerity of our words our prayers will be answered. The prayers of my mother and the help of God delivered me from the past war. I am, however, registered as a plumber and not a preacher. I have been educated since I came to this country.

In the previous Safety Congresses that I have attended the speakers have always spoken of education; sell it, make it; it does not make any difference how you get it over as long as you get it there. The thing is, are we competent enough to deliver it? I am doubtful of that. We all come from different walks of life. Some of us think that the man who comes from the school of labor is not able to think. Some of you come from the school of experience and some of you went through the school of war, as I did.

We are a divided body, some represent industrial corporations, others represent master builders' associations, others labor organizations, and some insurance companies. All of us went to different schools and all have different minds. That is where our troubles lie. One tries to do the thinking for the other and the other will not let him think at all.

Some of the past speakers thought we had too many laws. They think we do not need any more inspectors and we do not need this and we do not want that. I want to say we have laws and we have inspectors. May we have discipline! That is what we all want, and that is where the "roughneck" comes in.

Now I will revert to the war. On April 24, 1917, I received a letter from President Wilson. It informed me that on April 28 I was to be a soldier in the American Army. May 4 of the same year I was in training. We had laws, regulations and discipline. May we have some of the army discipline in some of our other walks of life! That is what we all want. The man at the head was a man of authority and he addressed himself to us in a snappy and curt manner and we listened and obeyed. We do not obey as

quickly as we should. On July 4 of the same year I paraded at Bordeaux, France, with Battery A, 315th Artillery, the Seventy-seventh Division. On July 11 I was among the bunch that fired the first artillery shot of the army, and every one of us lived, I want to tell you. I know we sang (and I did, too), "There are Smiles" and the rest of that, and I smoked cigarettes in the quarters of the Knights of Columbus, I got gum from the Young Men's Christian Association and clothes from the Red Cross; I went through it all. I did it only with the help of God and through obedience and discipline.

We came through all that alike and we went back to civil life. I think it was a fine trip and I am thankful to God and grateful to everybody. I guess it was for the good of humanity, just like this Safety Congress that is being held here. It is for humanity's sake that it is eliminating accidents. You suggest safety measures; sell them if you can, if they will take them.

I want to talk of the little experience I had out of twenty years in the building industry. When I went into the army Uncle Sam gave me a gas mask and I carried that on my chest for months, and he gave me a tin hat and I wore that on my head for the same length of time I carried the mask. The remarks of some of the speakers telling you about conditions in the building industry in New York City are the truth. If it would be beneficial and would not be thought a joke I would suggest that we wear tin hats in a building, because one can take a hammer and hit a man on the tin hat, and as long as you do not hit the peg on top it will not hurt him.

Talking of education, from my experience in the army I think God Almighty educated us there. We developed a sense of hearing so we could hear the "Z-z-z-ipp" of the shell and we knew enough to flop in a hole in the ground when we heard it. The only thing we could not escape was an Austrian "whiz-bang," because it banged as soon as it whizzed. We developed the sight of an owl. There was a drum two and a half inches in diameter on our gun. It was a bronze drum that was divided into 360 degrees, and in the dead of the night we could see every number on it in numerals of 5, 10, on up to 360. So consequently we got owl-eyed.

That is the same with our education. Some of the speakers make education appear so hard. It is not so hard. I went to a Teachers' Training School in the Board of Education in New York City and I had a professor by the name of Young, one of the nicest and most diplomatic instructors; and it is the simplest thing for anybody to get out and do that sort of thing. Nobody is dumb enough not to want to be educated. Professor Young cut the teacher's training short and divided it into little parts. He said: "Think, organize, speak!" We can all do that. We can all do it and not realize that we are doing it.

When it comes to educating we repeat, and that is educating. Then when you come down to telling and showing you make the

man you are telling it to show and try it. There is a difference in the people at this Congress. Let us pray for harmony and peace and let us demand strict discipline in regard to the rules of the New York Department of Labor, and let us be sincere in the teachings of safety. (Applause.)

CHAIRMAN EDWARDS: The time for adjournment is at hand and there are so few of us left that I take it all those who wanted to take part in the discussion have done so.

The session adjourned at 4:45 o'clock.

WEDNESDAY, NOVEMBER 30

EVENING SESSION

General subject: "Attainable Safety Ideals."

The session convened at 8:30 o'clock, President Hamilton presiding.

PRESIDENT HAMILTON: We are going to start with singing by the Humboldt Choral Club, of which our friend, Bill Guilbert, is the moving spirit and director.

The Humboldt Choral Club rendered three selections. (Applause.)

PRESIDENT HAMILTON: You have shown very forcibly your appreciation of the work of Bill and his Club, and we are going to hear from them some more. We are going to give them a rest and let some of our other artists perform for us.

In making up the program some months ago we were very much interested in having two speakers of note at this particular gathering, and I asked a gentleman of distinction if he could come, and he told me at that time it was impossible. Much to my surprise and gratification in the dining room this morning at breakfast this gentleman came up to me. Other business had called him here, and he is ready to keep his agreement, and I think that you will be gratified, as I am, to have him here. This man has served the public with distinction. He has been a Justice of the New York State Supreme Court. He has represented our Government abroad as United States Ambassador to Germany, and he is now representing the public on the Industrial Survey Commission. I am more than happy and pleased to have this opportunity to introduce to you Judge James W. Gerard. (Applause.)

SHORT HOURS OF LABOR MAKE FOR SAFETY

By Hon. James W. Gerard, Representative of the Public on the New York State Industrial Survey Commission

COMMISSIONER HAMILTON, LADIES AND GENTLEMEN: It is a pleasure to be with you tonight and especially to hear this Choral Society that has so notably entertained us.

It always makes me sad to come to this great, splendid, powerful industrial City of Buffalo, because back in the time of the Revolutionary War one of my great-grandfathers went out to fight the British and the Indians, and while he was only 16 years old was captured by the Indians and carried up to this part of the world. He was brought up by the Indians and finally became Chief of the Hawk tribe of the Senecas, and the Indians gave him a square mile of land where the City of Buffalo now

stands. Unfortunately he sold it. That is why when I climb up to my little room tonight I shall cry myself to sleep.

I have come here to Buffalo as a member, representing the general public on the State Industrial Survey. That is composed of members of the Legislature, one member representing Capital and one Labor and one the general public. We have a broad commission to inquire into all matters affecting Capital, Labor and Industry in this State, and I think last year in our recommendation to the State Legislature for a forty-eight-hour week for women who work in factories and mercantile establishments we aided "the safety employment in this State," because you know there is nothing that makes for safety more than short hours of labor. And during the period of a year or more while we have been having these sessions we have had the pleasure of meeting the progressive labor leaders of this State, such as Mr. Sullivan, who has been here with you, Mr. Curtis, whom I spot sitting there in the fourth row, and others of the labor leaders of the State, who have shown themselves far more enlightened and progressive than those, for instance, in England, where there has grown up the theory that the longer you can take on any particular job the better it is for the workingman as a whole.

It was pathetic when I was in England this year to see them excavating for the new Bank of England and carrying out the dirt from the excavation in little baskets like little Red Riding Hoods going to market. It is pathetic to see a great train with only a few cars, instead of the long trains you see speeding across our own country. But in time they will learn efficiency.

It was a pleasure this year to meet your Chairman here, Commissioner Hamilton, who has so efficiently organized his Department that, for example, in the insurance part of it (because he presides over the State Insurance Fund), he has so ably administered that Fund that the insurer in the State Insurance Fund can insure for 27¾ per cent less than the cost in stock companies, and that I think is an achievement to be proud of.

We have an advantage over Europe in two particulars. We have an advantage first in mass production. Because we have at home this great market, we can produce on an enormous scale.

Not long ago one of the principal automobile manufacturers of France came to this country to study mass production and went back prepared to start it in his own country. He did start but found he could not dispose of his output, so he had to go back to the particular form of construction of automobiles which is usual in France, although they have great efficiency of labor.

I have just given you an example of the Bank of England, in the center of London, the financial heart of all the British Empire. We may lose that efficiency as time goes on, because in Europe they are urged on by starvation. There were one million and a quarter men last summer without employment in England alone. That with a family means about six million persons dependent on a dole or the small savings they make.

In England and in Germany the countries are not rich enough to ably support the population, and so in Germany they must earn every year by selling exports abroad enough money to buy food abroad for 20,000,000 people, and in England they must do the same for 10,000,000 people. That means that they are going to make a tremendous effort to drive us from the markets of the world. Their labor is much cheaper than ours, and so in time they will learn more efficient methods and with their cheap labor, unless we in turn progress in efficiency, they will drive us out of Russia, South America and the other places of the world, where we must sell production, because a nation whose exports do not exceed its imports can hardly be in a prosperous condition.

I have seen during the last year that in spite of the enlightenment of the labor leaders there are still a few flies in the ointment. Now nobody is against unions. Unions were absolutely necessary to the laboring men to bring them up from the position that Labor occupied at the beginning of the last century in England, but their power I hope will be used in the interest of all the public.

For instance, a great industrial waste injures the workmen just as much as it does Capital. There is what you call a jurisdictional strike. There was a time during the last year in New York when on one school building the carpenters were on strike because the plasterers were doing certain work, and at the same time on a building on Madison Avenue the plasterers were on strike because the carpenters were doing the same work. A great hotel built in New York was almost on the verge of bankruptcy on account of one of these disputes, where the owner stands with the money in his hands ready to pay anyone who will do the work, but the two rival unions dispute as to who will have the right to do that work and force a holdup of the whole operation. That is an industrial waste.

Building is the basis of everything. The very bread you eat has to be produced in a building. In our climate we cannot get on without it. But in the building trade there is great industrial waste.

Another waste is a strike against the use of new money-saving materials. As an example of that, in a building in Brooklyn, when the owners had put the plaster on the walls and had put the ground coat on the ceiling, they proposed to put on, through the painters, a material which is just as good as plaster apparently, whereupon the plasterers go on strike and compel the owners to spend $800 more than necessary on that one room in order to complete it in accordance with the demands of the strikers. That is industrial waste. It is an example of the strikes of the same kind that took place in England at the beginning of the last century, when they began using machinery, and the people used to meet and destroy mowing machines on the ground that the use of a mowing machine was putting people out of employment. That is a strike against progress.

We are too intelligent in this country to allow conditions of that kind to exist, to allow conditions to continue which mean an increase in the cost of living, not only to the capitalists, not only to the corporation, but to the workingman himself, who has to use the products that come from these very buildings, and who must live in these very buildings whose cost is so enormously increased.

I think I can speak with authority and say that the leaders of labor are against strikes of this kind; that they welcome any advance in efficiency, because that is putting the whole body of Labor on the road to what we all hope to see one day—Capital and Labor working so efficiently that we can meet the competition of all nations and have a five-day working week. That is the object toward which we should strive.

I have come here tonight only to talk to you a few minutes and only to talk on some subject that might interest you in the field of labor. It is pathetic abroad to see the way laboring men are living on small wages, and to know that in the markets of the world the workingmen of America must be in competition with them, and it is only by increased efficiency, only by watching every expenditure of money and of labor that in South America, Central America, in Asia, Africa, and Russia we can meet this competition.

We manage to keep out of war by being the most prosperous Nation that the world has ever seen; we are making advances in education, in the treatment of Labor, in the compensation paid to those who have been in industrial accidents, and the only thing left to be improved, to make us more efficient, is to do away with these useless strikes, which are really strikes against the workingman himself.

It has been a great pleasure to meet you here, ladies and gentlemen, and I hope sometime you will ask me to come and make a longer speech. (Applause.)

PRESIDENT HAMILTON: We are very grateful to Judge Gerard for coming here, and I know you have given adequate expression to him for the courtesy extended to us.

We will now hear from our friend Bill once more.

The Choral Club rendered a few more selections. (Applause.)

PRESIDENT HAMILTON: Well, Bill, that was fine, and I am quite sure that we are going to be ready for some more; so we are going to ask you to wait. (Applause.)

I told you we had another treat for you. We are going to have a genuine safety talk tonight from someone who knows, who has been for twelve years the organizer of safety with the International Harvester Company and for four and one-half years was with the Wisconsin Industrial Commission, and for almost three years he was the General Manager of the National Safety Council, and he is now a consulting engineer, handling bad risks. You can readily appreciate that we have here a background of experience that should teach us many valuable lessons.

I am happy indeed now to present to you Mr. Charles W. Price. (Applause.)

HOW TO REDUCE DISABLING ACCIDENTS

By Charles W. Price, Consulting Safety Engineer, New York City

COMMISSIONER HAMILTON, LADIES AND GENTLEMEN: During the few minutes that have been allowed me on this program I want to answer this question: Why is it that notwithstanding the fact that this accident prevention movement in the United States is twenty years old—twenty years ago the United States Steel Corporation made the great pioneer demonstration—notwithstanding the fact that in hundreds of plants all over this country accidents have been reduced from 50 per cent to 75 per cent (I know some plants in which accidents have been reduced 90 per cent); notwithstanding the fact that the methods of accident prevention are simple and applicable to any industry; notwithstanding the fact that these methods have become standardized and information regarding them is available without cost to any manufacturer who will walk into the door of these plants that have done efficient work and ask for it—now why in the face of all these facts, friends, must we now stand up here and say, quoting from the National Council of Compensation Insurance, the best authority among insurance companies, that comparing 1923 with 1919 the number of workmen in the United States, estimated on the basis of the number of hours worked, who were injured and lost time increased 27 per cent? If these figures were brought down to date the record of compensable accidents would show even a larger increase. I have good authority for this statement.

For instance, take these three large manufacturing States—in York State, comparing 1924 with 1922, compensable accidents increased 52 per cent; in Massachusetts during the same years compensable accidents increased 18 per cent, and in Pennsylvania, comparing the record of 1925 with that of 1922, compensable accidents increased 28 per cent. The Department of Labor of New York State reports that during the fiscal year 1922–1923 there were 346,000 accidents reported to that Department, while in the year 1926–1927, ended June 30, that record had jumped from 346,000 to 518,000, an increase of nearly 50 per cent.

Now, why this condition? Our Bolshevist friends would stand up and say it is because the employers of labor are hard-hearted and inhuman, and they are indifferent to human suffering and care nothing for the welfare of their employees and their families. Now, friends, that statement is not true. In my work during the past twenty years I have had to deal with general managers of industry nearly every day. I do not believe that I can honestly say that I have met a half dozen industrial managers who were cold-blooded and indifferent to human suffering.

There is some other explanation of the fact that after twenty years of experience in accident prevention we now find that compensatable accidents have increased all over the country. Permit me to offer you my own explanation of this situation and the remedy.

In the typical industry where inefficient safety work is being done I have found in practically every case in my experience that this is the situation: The manager is an intelligent, decent, human sort of a person and he regrets that he is having so many accidents. Now, why is he not doing efficient safety work? It is because he is not informed. He does not know from first-hand experience what has been accomplished. He does not believe that accidents can be prevented because he does not know how that is being done. Now, how is such a manager to be convinced and aroused so that he will take steps to develop a thoroughgoing, efficient safety organization in his plant? I have found that there are three steps in convincing such a man. First, place before him the experience of a number of companies that have made substantial reductions in accidents and show him the financial gain. Then you have not convinced him; you have only interested him! That is to say, you have not sufficiently convinced him to make him act. The second step is to tell him very simply, in detail, just the methods that were adopted in accomplishing these results, so that he will say when you have finished: "That is simple; I can do it." The third step in actually getting this manager to set in motion a safety organization is to help him sell the idea to his foremen and employees and to acquaint him and his foremen with all of the details of the plan.

The problem is, how are we going to thus reach and convince the thousands of industrial managers throughout the country who are not doing efficient safety work? We have tried the printed work for twenty years. For twenty years industrial magazines have published the experience of various companies which have achieved remarkable results in reducing accidents. The National Safety Council and other organizations have broadcast complete information and still industrial accidents are increasing! We had hoped that the experience of the companies which were pioneers in this movement would seep down into the ranks of those who had not done successful safety work, but this seems too slow a process.

I believe, friends, that the future development of accident prevention in this country is going to depend largely upon State Labor Departments, insurance companies and manufacturers' associations employing and sending out into the field a larger number of men who through education and true experience are equipped to meet the industrial managers and to sell them the safety idea and then to help them sell their organization and to help develop an organization to promote safety.

Now, I am not criticising the safety inspectors of insurance companies of State Labor Departments. They are doing their job, but there is a demand for another type of man—a man who has salesmanship ability and leadership and organization ability, and above all, a man who has the ability to meet and win the cooperation of executives.

In considering this problem of the future development of accident prevention let us stop for a moment and take an inventory

of what has been accomplished so far. Let us see what has been demonstrated it is possible to do in preventing accidents. Let me give you the most interesting story I know. The other day I was in the offices of the United States Steel Corporation at New York City and had a conference with Mr. Harry Schultz, one of the two chief safety engineers, who told me this story:

Some four or five years ago Judge Gary initiated a plan of conducting a gold-star honor roll contest among all the steel plants, mines, and railroads of the corporation. In this contest a plant was placed on the gold-star honor roll, and that honor roll was posted in each of the plants, if the plant operated thirty days without a single lost-time accident. Now, for a steel plant to go thirty days without even a slight accident is a remarkable accomplishment. Here is the record: During 1926, 306 steel plants, mines, and railroads with 122,000 men entered the contest. Out of these 306 plants, on the average that year, there were 175 plants each month that operated thirty days without a lost-time accident and were registered on the gold-star honor roll. The plant that made the banner record was the Joliet plant near Chicago, which with 2,800 workmen made a record of four straight months without a single workman being sufficiently injured to lose a day's time. During June of this year the Portland Cement Company, with five separate plants employing a total of 3,300 workmen, operated the entire month without a single lost-time accident.

Now, when we consider that according to the statistics of the United States Steel Corporation only about 5 per cent of its accidents are caused by machinery, we appreciate what must have been done in the way of an intensified, organized, educational effort to get those thousands of men so intensely interested, notwithstanding the extraordinary hazards of that industry, as to make a record such as these men were able to make, the most remarkable record in industrial history.

The United States Steel Corporation's records show that during the years between 1912 and 1926 disabling accidents were reduced 84 per cent and 322,000 men were saved from either death or injury, and incidentally a million dollars profit was saved each year.

Let me give you the record of another company which is most significant. The Fisk Tire Company reduced its lost-time accidents 86 per cent, comparing 1924 with 1919, resulting in a saving of 83,000 days, of $399,000 in wages, and a reduction in insurance premiums of $110,000.

The Chairman spoke of my experience in Wisconsin. During the four years I was associated with the Industrial Commission of that State the one point which the Commissioners emphasized with the inspectors was that they must reach the manager and superintendent and secure their whole-hearted interest in the promotion of safety. During the four-and-one-half years from 1911 to 1916, through the efforts of the Commission along these lines, accidental deaths in the State were reduced 61 per cent.

During the World War I happened to be associated with the Commission in Washington that had charge of accident prevention in all of the arsenals and navy yards. Through the efforts of Mr. Ralston, the safety manager in the Mare Island Navy Yard at San Francisco, lost-time accidents during the first two years were reduced 81 per cent, and this was accomplished in the face of the abnormal labor situation which characterized that period and the great pressure which was brought to bear by the Government.

Now, I am saying that if it can be done in these plants it can be done in any plant. During the few minutes that remain for me I want to briefly outline what has proven to be the determining factors in successfully organizing accident prevention in an industrial plant; what have been the methods which have been found most successful in reaching and gripping the interest of the workmen and keeping them continuously interested day in and day out. Let me say at the start that the one thing which all of these companies have done is to set up certain pieces of machinery, if you want to use that term; organized certain activities which served to continuously keep safety before the foremen and the workmen.

In my conference with Mr. Schultz of the United States Steel Corporation, mentioned earlier in my talk, I said: "Mr. Schultz, tell me what has been the secret of the remarkable accomplishment of the United States Steel Corporation in reducing accidents? What are the few things that you have found most effective?" He replied that in his opinion there were three activities, three features of the organization which were largely responsible for their success.

"In the first place," said Mr. Schultz, "the general managers of all of the 306 plants were vitally interested and were actively identified with the safety campaign and gave it their personal time and attention. This leadership made it impossible for any foreman or workman to doubt for a minute what the manager expected him to do."

In many plants which have attempted safety work (Mr. Schultz explained) the manager would start out with enthusiasm and initiate the campaign, but after it got under way he would fail to continuously identify himself with it. We must always remember that in accident prevention we are dealing with human life. In order to get the foremen and the workmen seriously interested the manager must not only show ordinary interest, but he must show extraordinary interest so that the workmen will come to believe that he really cares for them as human beings.

The second activity mentioned by Mr. Schultz as determining their success will perhaps sound new to you. He stated that in each department once a month the foreman calls together the workmen and holds a safety meeting for perhaps ten or fifteen minutes. At this meeting the foreman reviews two or three accidents which have happened during the previous month and points out what might have been done to prevent them. He then opens the meeting to questions and suggestions and general discussion. Mr. Schultz stated that in many of the departments the workmen did most of

the talking because of the fact that the foreman had won the confidence of his men and made the meeting friendly and informal. Now, these meetings are not occasions for oratory, and do not call for any remarkable ability on the part of the foreman. They are simply little get-together meetings for the men of the department to discuss ways and means to protect human life.

In my work in the last two years I have handled a number of large department stores. I found one of the most effective methods of quickly lining up a department in which the accidents were increasing was to call all of the employees together for a ten-minute talk, and at this meeting to present the facts in regard to the accident experience and to point out what they could to to protect themselves and their fellow-workmen. For instance, we found in one of the departments there were a large number of serious accidents resulting from women falling in and out of passenger elevators. We started a series of early morning meetings with the forty elevator operators and within three months we had practically eliminated all accidents of any consequence. I found that in any department where the record was not satisfactory I could do more in fifteen minutes by calling the employees together than I could possibly do in any other way. At the present time I am working with a large number of automobile fleets and one of the important features of our program is to hold a ten-minute meeting of the drivers once a month. In some cases where the conditions are especially serious we hold them once a week.

Now, in adopting this method of departmental meeting of employees we are utilizing the same psychology which has been used in all efforts to improve human conditions from the earliest time. It has been found that men can be influenced in a group as they cannot be influenced by appealing to them individually.

The third activity mentioned by Mr. Schultz is the monthly, or weekly, meeting of foremen, presided over by the plant manager or superintendent. At these meetings the accident experience of the previous month is reviewed and ways and means of preventing similar accidents are discussed. These meetings offer an opportunity for a frequent exchange of experiences so that each foreman profits by the experience of all the other foremen. The manager, or superintendent, has the opportunity at each one of these meetings to indicate to the foreman his own personal interest and the interest of the company in the work of protecting human life. It has been found that when these meetings are properly conducted a plant manager can do more in thirty minutes to keep his foremen intelligently interested and aggressively active in promoting safety in their respective departments than in any other way. In my own experience in organizing industrial plants in the past twenty years the monthly meeting of foremen is the one most useful piece of machinery that can be set up in a plant in which accident prevention has not been organized. If I can get the manager of a plant with a bad experience to meet his foremen in

the right spirit once a month I can usually make the plant a safe plant.

A fourth activity which I have found effective in getting results is the Workmen's Safety Committee. The committee idea has been adopted throughout the United States Steel Corporation's plants and in practically every industrial concern which has done successful safety work. In the larger plants a committee of three of the rank and file of workmen is appointed from each department. In a smaller plant it is often the practice to appoint a committee of five for the entire plant. Now, the success of the committee idea depends entirely on the attitude of the foreman. If he does not believe in it, if he does not believe that the workmen can be of valuable assistance to him in weeding out dangerous conditions and practices, and if he does not encourage the committee and show some appreciation of its efforts the committee idea will be a failure.

Let me say in the first place that the experience of many plants with the committee idea reveals the fact that 90 per cent of the suggestions made by the workmen are good ones and are adopted by the company. I remember one striking example of the Chicago & Northwestern Railroad, which had some 700 men on its committees throughout its system. During the first three years these committeemen made some 6,000 suggestions and the records showed that all but 285 of these suggestions were actually adopted and carried out. It has been found that when workmen are appointed on these committees and are properly instructed and encouraged by their foremen three results follow:

In the first place, when these men go out to make an inspection they discover what it is difficult to tell them and convince them that a large percentage of the accidents cannot be prevented by any mechanical guard or equipment, or by anything which the company can buy with money or build up with iron, or steel, or wood; if prevented at all they must be prevented by the workmen.

The second result of this active participation of the workmen in promoting safety is that they take a new and more intelligent interest in accident prevention.

And the third result is that with this increased knowledge and interest they can do much to spread that interest among their fellow-workmen.

One of the things that must be considered in making the idea a success is that the suggestions made by the committee should receive careful and serious consideration, and if adopted should be promptly carried out. If it is found that a suggestion is not practical the foreman should carefully explain the matter to the committeemen so that they will not lose interest.

Now, these four activities, these four little pieces of machinery, can be set up in any plant however small or however large. They will work just as well in a plant with fifty men as they will in a large plant, for after all a large plant is made up of departments with fifty to a hundred men in them.

Let me say in closing that in any industrial plant, however hazardous and however bad the accident record has been, if these four simple activities are organized by the general manager and are given his whole-hearted and continuous support, the disabling accidents can be reduced at least 75 per cent. In other words, twenty years' experience in hundreds of plants have absolutely demonstrated that *it can be done!* (Applause.)

PRESIDENT HAMILTON: We are deeply grateful to Mr. Price for that illuminating address and I know we have profited by it very much.

Bill!

W. J. GUILBERT: I am very sorry, Commissioner, that we brought only six pieces with us. If I had known you were going to enjoy this so much we would have brought sixty. So, with your permission, I am going to sing a solo.

Mr. Guilbert sang two solos. (Prolonged applause.)

PRESIDENT HAMILTON: I know that I express your wishes in the matter and your feeling when I tell Bill and his gang that we have been splendidly entertained and will never forget their part of this evening's program. We have a splendid program for tomorrow. I hope you will all stay for it. (Applause.)

The session adjourned at 10 o'clock.

THURSDAY, DECEMBER 1

MORNING SESSION

General Subject: "Safety: How to Get It."

The session convened at 10 o'clock, President Hamilton presiding.

PRESIDENT HAMILTON: You probably realize that at these meetings we have had the helpful assistance of the members of the Industrial Board, who have generously presided at the various sessions. This session will be no exception to the rule. Dr. Leonard W. Hatch, who has had many years' experience in connection with the Department of Labor—last year, this year and previously—was largely responsible for the successful programs we have had, and he is still with us. We are happy that he is. I am delighted, indeed, to introduce Doctor Hatch this morning as a Member of the Industrial Board and the Chairman for this session. (Applause.)

CHAIRMAN HATCH: I can assure you that the program this morning is very much worth your while and the speakers who have consented to cooperate in the making of this Congress a success will not fail you for the rest of the Congress today. There is so much that is worth while that I am not going to say anything more

Today we are going to consider how to do safety work. We hear a great deal about the methods of safety work and technical things that have to be done, and today, as you have noticed, the program is on how to get them done. One of the agencies that are moving in the direction of bringing about real safety work in the employers' associations. Down in New York City in the past year the Merchants' Association has undertaken a very interesting piece of new work in this field. The first speaker today is going to tell us something about that development in safety work in the City of New York, and I take great pleasure in introducing Mr. Martin Dodge, the manager of the Industrial Bureau of the Merchants' Association of New York City. (Applause.)

ACCIDENT PREVENTION WORK OF THE NEW YORK MERCHANTS' ASSOCIATION

By Martin Dodge, Manager, Industrial Bureau, The Merchants' Association of New York

MR. CHAIRMAN, LADIES AND GENTLEMEN OF THE CONGRESS: It is a fortunate circumstance that Doctor Hatch should be presiding at this session, as it makes it easy for me to thank him for the work which he has done for the Merchants' Association. As a member of the Association's Special Committee on Industrial Accident Prevention he has given valuable assistance and advice

during the past year in connection with the safety work which the association has undertaken.

As a matter of fact, I think he is much better qualified than I to tell the story of what we are doing, as his long experience in this field gives him an excellent perspective for judging this work.

Those of you who are not familiar with the scope and purposes of the Merchants' Association of New York may be surprised to know that that organization has entered the industrial safety field. You may not be familiar with the fact that in spite of its name the Merchants' Association includes in its membership a large number of manufacturers, probably as many manufacturers as any other single group of business concerns.

There are a number of reasons why the association has undertaken this work. The principal one of course is the appalling distress, suffering and economic loss resulting from industrial accidents in this State. I was thinking, when I was attending the meeting here Monday night, when this room was packed full of people—all the seats were filled, the aisles were filled, the galleries were filled—that there was still probably not as many people in this room as die every year in New York State from industrial accidents. If this industrial malady—carelessness, poor housekeeping, what not—that causes fatal accidents should suddenly have stricken the audience which was in this room still the tragedy would not have been so great as that which befalls the industrial workers of this State every year.

In addition to that, as you know, hundreds of thousands are injured annually—more than two-thirds of the population of the City of Buffalo, nearly 450,000 in fact, for the year 1926.

I say there are many reasons why the Merchants' Association has entered this field, but these reasons alone are sufficient. As the leading business and industrial organization in the leading manufacturing city of the State it is natural that this association should take cognizance of this terrible condition.

There are some 46,000 factories in New York City that employ about 700,000 workmen. It has not been our purpose to attempt to carry out industrial safety work in all of these factories. We have not even attempted to engage in this work in the factories of all of our members because they are scattered all over the country. We have restricted our efforts to those groups of members having plants in New York City so that we might have an immediate and intimate contact with them.

Commissioner Hamilton in his opening remarks yesterday referred to the program as being the rifle approach as compared to the shotgun approach of this question. I might characterize our efforts as the revolver approach. We are aiming at a specific target and we are doing it at close range. We interest those people in industrial safety that we can reach daily on the telephone, or by personal visit, in addition to letter communication.

We do not group all of these manufacturers in one classification. We choose homogeneous groups, such as metal manufacturers,

food products manufacturers, warehouses, or some other homogeneous group, well represented in our membership in which the accident hazard is high. Then we shoot at three or four specific objectives in each of these groups.

Our first effort is to interest the executive on the theory that if the executive of the establishment is interested the chances are that the employees will become interested. If the executive is not interested there will be great difficulty in interesting the employees.

The membership of our association is made up of corporations, firms and companies, each of which names a personal representative for purposes of contact in association affairs. That representative is usually a high officer, the president or the chairman of the board or some other executive of the concern. Our approach is to that individual. We attempt in every instance to interest the high executive. In the second place we aim particularly to engage the interest of the small establishment as opposed to the very large one, which perhaps already has an adequate safety organization, a safety engineer and the other things that go with modern accident prevention.

It has been pointed out once or twice before during these sessions that the industrial accident rate is higher on the whole in the small establishment than in the large establishment. It is difficult, however, to convince the small manufacturer that his accident record is bad because of the fact that, due to his small exposure, accidents occur in his establishment at comparatively rare intervals. In short, he does not think that he has many accidents, and there is difficulty in interesting him in accident prevention work. Nevertheless the smaller manufacturer is our objective. He is less able to supply for himself the best organization and equipment for safety, but his bad record detrimentally affects not only himself, but the larger manufacturer also in that his own accident experience is taken into account in fixing the compensation insurance rate and some of his own employees, poorly trained in accident prevention, shift from time to time to the larger establishments, where they constitute an accident hazard.

In the third place we aim to demonstrate the value of educational work and organization as opposed to the installation of costly physical betterments, realizing that great progress has been made in the installation of guards and mechanical devices for the prevention of accidents, and probably less progress in securing the active, continuous interest of the worker, foreman and executive; knowing also that in the field of education and organization an agency such as the Merchants' Association can undertake effective work.

Along with these three objectives we have adopted a program of approaching the manufacturer in three different ways—through contests, conferences and consultation. The contests are organized, not among all of the manufacturers in our membership with plants in New York City, but only in those homogeneous groups such as the metal trades, food products manufacturers, etc., men-

tioned before. Several of these contests are being run simultaneously. After starting a contest the plan provides for the calling together of representatives of the various contestants in a series of conferences to discuss the objects of the contest, the best methods of promoting safety and various other questions which will add to the information of the participants and otherwise advance the objectives of accident prevention. As our Special Committee on Industrial Accident Prevention is made up of experts in this field there is always available at these conferences some one who can discuss accident prevention authoritatively, and they of course provide in addition the opportunity for the free interchange of experiences between the contestants.

In the third place we have on our staff a safety expert who is available at all times to go to the plants of the various contestants, make an analysis of their condition, talk to the workmen, foremen and executives, find out precisely what their situation is, and make a written report if necessary, with recommendations to their organization.

These three "C's"—that is, Contests, Conferences and Consultation—constitute the three methods that we are using and we are not doing it sporadically or temporarily, but continuously. That would add another "C" to our group—Continuity. We believe that there are no holidays in industrial safety work. Accidents may occur any day. In the case of our metal trades group, although it was our hope and expectation that the accident contest would continue indefinitely, the suggestion came from the committee representing the metal trade manufacturers themselves that at the termination of the brief contest period the whole business be started over again and continued, not for a three-month or four-month period, but on a yearly basis, not for one year, but year after year. Such a continuous program is the plan and ambition of those who are responsible for this work.

One further word about the contest itself. We make it as simple as possible. We supply the contestants with small blue cards. We ask them to send these cards to us every week with two facts, total man-hours worked during the week and the number of accidents, if any, during the week. The accidents are classified in accordance with their severity.

Later perhaps we will ask them to give us more information, but in the beginning we feel that the simpler the plan can be made the more people will likely be interested, and it is our observation that, although the interest is small at the beginning and it is necessary to eliminate any obstacles which might prevent the participation of the maximum number, very shortly the interest increases, and it has been our experience to date that those who show the least interest in the beginning are very nearly showing the most interest at the present time.

These cards are sent in to us weekly, and in the contest which we already have under way we have received 100 per cent return

from the contestants. We supply a monthly report to the contestants consisting of three separate parts. The main part of course is that which shows the standing of the various contestants. It gives the symbol number for each company so that the recipient of the report can find his position readily. It gives the total man-hours worked from the beginning of the contest up to the time covered by the report. It gives the number of lost-time accidents for every concern in which such accidents have occurred. It gives the number of man-hours worked per accident, if any. Finally, it gives the frequency rate—that is to say, the number of accidents per million man-hours worked. That factor determines the standing of the various contestants.

The second section of this report is devoted to an analysis or a tabulation of the accidents which have been reported, giving both the cause and the character of the accidents, their nature or severity.

The third part of the report consists of two or three paragraphs describing some typical accident which has been reported during the period covered by the report. It describes the accident, tells how it can be prevented and how it should be prevented in the future.

This contest has not proceeded far enough yet so that we can count lives that probably have been saved; perhaps we cannot even count fingers and toes which have been saved, but we can measure very definitely the increased interest of the executives and we feel that if there were no other evidence of benefit than that, it alone would justify the effort which is being put into it. (Applause.)

CHAIRMAN HATCH: There is another agency in the State which is doing that sort of work. That is one with which you are all familiar, Associated Industries, which in a way represents rather the up-State part of New York State as compared with New York City, about which you have just heard. Those who attended the Safety Congress last year will recall that Associated Industries made some report of its "No-Accident Contest" last year. Another "No-Accident Contest" is being conducted this year, and, as I think you will hear in a few minutes, it is a bigger and better one than the one last year.

I am glad to introduce Mr. F. E. Redmond, Director of the Bureau of Education of Associated Industries of New York State. (Applause.)

NO-ACCIDENT CONTEST OF ASSOCIATED INDUSTRIES

By F. E. Redmond, Director, Educational Bureau, Associated Industries of New York State, Inc.

MR. CHAIRMAN, LADIES AND GENTLEMEN: The basic cure for preventable accidents in industry lies in continued interest of Management and workers in accident prevention. It is to secure and maintain this interest both of Management and men that Associated Industries annually conducts an accident prevention campaign in which any industrial firm within the State with sufficient man-hour exposure to qualify, is eligible to participate.

It has been proved pretty well to the satisfaction of all students of accident prevention methods that any movement which will arouse the competitive spirit will bring results in reduced accident frequency, and consequently, severity. Such a competitive spirit is aroused by a safety campaign, or contest, whether such contest be between plants or between individuals. When you can combine the two and rouse the fighting instinct of both plant executives and the workers on the job then the greatest benefits may be accomplished.

Three years ago Associated Industries fostered its first accident prevention campaign. It was not really a campaign in the true sense of the word. It was an experiment in which we sought to learn how much interest could be maintained for a definite period of time. Only shop foremen were enlisted. No composite records were kept, but each firm whose foremen were enlisted was permitted to select from among them those foremen who, in their opinion, were deserving of reward for safety records made during the period of the campaign.

With the cooperation of Commissioner Hamilton, of the State Department of Labor, we were able to award engraved certificates of merit under the seal of the Department of Labor of the State of New York and over the signature of Mr. Hamilton as Industrial Commissioner. Some 1,400 of these certificates were awarded to foremen at the Ninth Safety Congress at Syracuse.

It was evident, therefore, that there was plenty of interest among the foremen in the various industrial plants of the State, so in 1926 it was decided to enlarge upon our program somewhat and to foster an interplant competition. More than 300 firms, employing some 120,000 workers, were enrolled in that campaign and carried through the entire thirteen weeks' period. Firms were grouped in classes according to their accident hazards and, while there was little complaint of inequality there was some inequality because both large and small firms were competing in single groups with an advantage to one or the other, the viewpoint depending on whether you were interested in either the large or the small plant.

However, at the close of the campaign each contesting firm was requested to express its opinion as to future contests of this nature and the response for their continuation was practically unanimous.

With this reaction it was decided to enlarge the program still further in 1927, the present campaign. The 1926 contest was

restricted to member companies of Associated Industries, but our Board of Directors recognized the broad aspect of the movement and readily granted permission to enlist any firm in the State with sufficient man-hour exposure to qualify under the rules governing the campaign.

As a result the present campaign was launched September 4 with an entry list of 730 firms, employing more than 200,000 workers in the manual trades. The disinterested or lukewarm contestants eliminated themselves early, however, and we settled into the campaign with the active support of 650 firms, with an employment of 186,000 workers.

With this tremendous entry list it was possible for us to remedy the inequality which marked the 1926 campaign by further dividing the entries so that they might be grouped not only according to nature of hazard but according to size as well. As a result the present campaign embraces sixty-four separate groups in four different classes. Practically every manufacturing operation is represented, and some which are not purely manufacturing, such as railroad operation, construction and mining.

As was the case in 1926 each contesting firm reports to Associated Industries weekly its number of accidents, number of man-hours worked by the mechanical forces and number of man-hours lost through accidents. On these figures we, in turn, calculate percentages based on the amount of time lost through accidents to the amount of time worked, and return to the contestants each week a list of standings, arranged according to experience; the best experience heading the group and so on down to the last entry.

This to us is the most important item in sustaining interest. Through these weekly reports the contestants are advised just where they stand each week and are able to use this information as a stimulus to their employees either to climb higher up the scale or to hold tight to the top if they are fortunate enough to occupy that place.

Associated Industries has issued during the campaign approximately 50,000 safety posters, a different one for each week of the campaign, but contestants were asked to augment these with posters from their insurance carriers, the National Safety Council, or any of the other services to which they might be subscribers, and concentrate their safety efforts on the thirteen weeks of the campaign. We have received outlines of many schemes put into effect by the various competing firms, but I have not the time to go into them here. The effect desired, however, was gained—that of holding the interest of the employees. I know from personal observation that intense interest was the result in a number of cases and reports from men in the field show that interest generally in the campaign was all that we could hope for.

The entire campaign has been under the supervision of a special committee made up of safety men of the various industries and the insurance companies, who have given us excellent backing throughout the campaign. May I right here extend our thanks to Messrs.

Fiesinger, Bowers, Eaton, Christopherson, De Blois, Kolb, Aldrich, Shartzer, Stearns and Seymour, the members of the committee, who have given us the aid of their valuable counsel throughout the campaign?

The campaign will not close until Saturday of this week. I regret, therefore, that I shall be unable at this time to give you a complete resumé of the campaign. Nor will it be possible to announce winners at this time, much as I should like to do so.

We completed compilation of the tenth week only last night. You will realize that handling the reports of nearly 700 firms weekly entails a vast amount of work on our office staff and we are, therefore, considerably behind the campaign. However, we have been working in the belief that reports must be accurate, and where we have found inaccuracies we have gone back to the entrant for a correction. All this takes time.

At the end of the tenth week, therefore, we find, first, that 270 of the 645 firms still in the contest are showing perfect scores. Of course among these hundred percenters a majority are what might be termed small firms. If I may digress further I would like to say that we believe this campaign has been of great value in interesting the managements of the smaller firms in accident prevention. Out of the total list of entries were 279 firms employing 100 men or less. Many had never taken part in any kind of a safety campaign. It is of extreme importance that the small firm be enlisted, for the aggregate experience of small firms in every set of statistics I ever examined shows their experience to be much worse than that of any single large corporation with a comparable man-hour exposure. Campaigns of this kind, therefore, have a distinct value in gradually selling the accident prevention idea to Management and employees of these small concerns.

We find that in these ten weeks the average exposure has been approximately 8,725,000 man-hours weekly, or a total of 85,271,890 to the end of the tenth week. This means that approximately 113,500,000 man-hours will have been worked by the close of the campaign. Going back to the tenth week again, we find that the loss through accidents has been 278,124.43 man-hours, or one-fourth of one per cent of the total man-hours worked.

We have had eleven fatalities reported, as against ten for the entire campaign last year. However, of these fatalities this year six occurred in industries which were not enlisted in the 1926 campaign; namely, construction, railroad operation and mining. In spite of this inequality, which makes a close comparison impossible, we have continued to use an average of the entire campaign as a basis for comparison with the 1926 contest and find that this year we are slightly better than in 1926. Eliminating the hazards which were not included in 1926 we will find, when the figures are finally reviewed, that the present campaign will show a decided betterment in experience, both in severity and frequency, over last year.

Throughout the campaign we have tabulated only those accidents which caused lost time beyond the next regular shift or turn and

only actual hours lost through such accidents. The only arbitrary penalty has been one of 12,000 man-hours for each fatality, such charge being made against the week in which the fatality occurred.

As I stated at the start there are sixty-four groups in four classes. To the firm standing at the top of each of these groups at the end of the campaign one of these trophies will be awarded [exhibits trophy] and to every other firm with a standing of 100 per cent, but whose man-hour exposure is insufficient to qualify as a trophy winner, we will issue a certificate of merit like this [showing certificate] with the name of the firm engrossed and the certificate signed by our president and bearing the seal of Associated Industries.

Mr. Chairman, I shall not take up any more time. I trust that what information I have given here will be of some help to any other organization or industry which contemplates a safety campaign. We shall be glad at any time to go into further detail with anyone interested in promoting campaigns of this kind.

We feel that a State-wide campaign such as this can be of immeasurable benefit in many ways. While we had nearly 700 firms enrolled this year we hope to see this number doubled in our fourth campaign, which will be conducted for three months next year. The campaign will be open to any firm wishing to participate, provided it will have an exposure of at least 12,500 man-hours during a thirteen weeks' period, and I extend now an invitation to every such firm in the State to join with us next year in this wholly unselfish and constructive drive to reduce preventable injuries in New York State industries to the absolute minimum.

The result of the campaign in the tenth week is summarized in the table that follows:

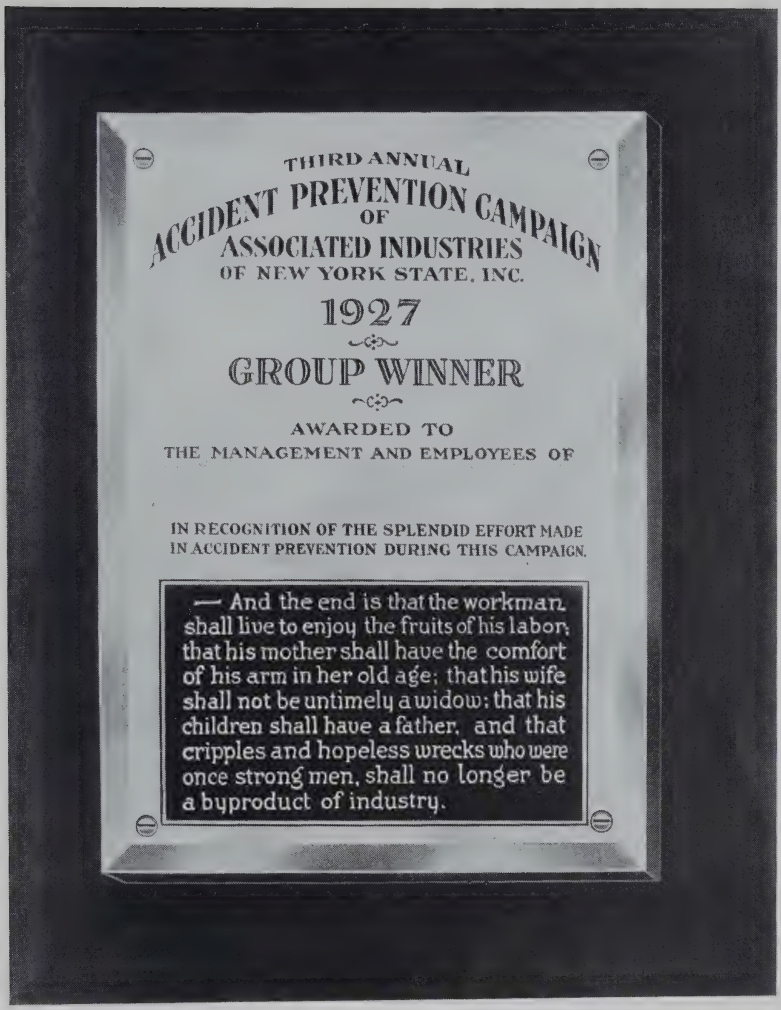
SUMMARY (TENTH WEEK — NOVEMBER 6–12)

	Class 1	Class 2	Class 3	Special class	Total
Total firms competing	109	187	279	70	645
Total employees exposed	112,874	35,967	15,721	19,832	184,394
Man-hours worked:					
This week	5,086,659.23	1,677,992.17	696,235.83	939,097.55	8,399,984.1
To date	51,153,916.85	17,085,551.89	7,239,576.74	9,792,847.59	85,271,890
Total accidents:					
This week	93	34	28	26	181
To date	959	325	211	264	1,759
Total fatalities:					
This week	0	0	0	0	0
To date	4	4	0	3	11
Total man-hours lost through accidents:					
This week	12,034.13	3,969.90	2,612.83	1,954.45	20,571.31
To date	132,675.98	74,867.75	15,128.45	55,452.25	278,124.43
Percentage:					
This week	99.763	99.763	99.624	99.791	99.755
To date	99.740	99.561	99.791	99.433	99.673

PERCENTAGE COMPARISON WITH 1926 CAMPAIGN

Tenth week, 1927	99.755	First ten weeks (1927)	99.673
Tenth week, 1926	99.543	First ten weeks (1926)	99.668
Improvement over 1926	.212	Improvement over 1926	.005

(Applause.)


THIRD ANNUAL
ACCIDENT PREVENTION CAMPAIGN
OF
ASSOCIATED INDUSTRIES
OF NEW YORK STATE, INC.
1927
GROUP WINNER
AWARDED TO
THE MANAGEMENT AND EMPLOYEES OF
IN RECOGNITION OF THE SPLENDID EFFORT MADE
IN ACCIDENT PREVENTION DURING THIS CAMPAIGN.
— And the end is that the workman shall live to enjoy the fruits of his labor; that his mother shall have the comfort of his arm in her old age; that his wife shall not be untimely a widow; that his children shall have a father, and that cripples and hopeless wrecks who were once strong men, shall no longer be a byproduct of industry.

CHAIRMAN HATCH: Mr. Redmond has suggested that there may be some safety man from one of the plants here who knows about this contest and who might give us a word.

SEYMOUR W. DORAN (Pratt & Letchworth, Buffalo): I am not prepared to say much. I will say this, however, that I believe these campaigns are of immense advantage. I do not believe they are particularly so with the larger companies. I am talking about the companies that employ upwards of 500 men. I checked a number of the smaller plants employing less than 100 and, as

Mr. Redmond says, this contest has inspired a lot of interest among them. I believe this interest will be lasting. In the smaller factories safety seems to have been very much sidetracked. I do not know why, because the men get hurt there as well as they do anywhere else. In the several plants that I have visited I find that the interest due to these campaigns has increased. I believe they have gotten to a point where they know these campaigns do a lot of good. I am of the opinion that even after the campaign is over this spirit will be continued. In my judgment it is a mighty good thing. (Applause.)

CHAIRMAN HATCH: We have a very long program this morning. This program is in many instances very interesting. There is one thing, as you all know, in safety work and that is the insurance companies. No program on agencies that can do safety work would be complete without a representative of the insurance companies.

I am now going to introduce to you a representative of one of the primary insurance companies, who is going to tell us something about the peculiarly difficult problem, as we have heard in previous sessions of this Congress connected with a small plant. His subject is "How to Get Safety in Small Plants." I want to introduce Mr. John J. Sheridan, of the Royal Indemnity Company of New York City. (Applause.)

HOW TO GET SAFETY IN SMALL PLANTS

By John J. Sheridan, Director of Safety, Royal Indemnity Company

MR. CHAIRMAN, LADIES AND GENTLEMEN: In the preparation of this paper I found it necessary to define a small plant. For purposes of this discussion I have considered a small plant to be one with not over fifty employees.

You may ask: Why select that number? Because the employer who has fifty employees or more will be found an advocate of organized safety. He will insist on having a standard safety organization in his plant because he knows he will conserve man power, cutting down the expense of labor turnover, due to accidental injuries and he knows that he will profit by having a good experience record.

The owner of the small plant who has less than fifty employees usually believes that he can save nothing by organized safety and probably no one has tried to convince him otherwise. It is the speaker's belief that the owners of small plants have never been "sold" upon the subject of their responsibility for the safety of the employees for whom they should be guardians. For after all, are we not our brother's keeper, and in view of such responsibility should we not be most eager to jealously guard those who are working for us? When approached on the subject of safety the owner of the small plant will invariably say that his plant is

too small for organized safety work, and he has not time to keep records—why keep records?

Here is where the services of a diplomatic safety engineer or inspector is required to explain to the owners of the small plants that their fears about losing time in keeping records was fallacious. We should point out to them that as they believed it necessary to keep records for our Government and State and their own business, so it is also necessary to keep records of safety work. To install safety does not require an elaborate expenditure of time in keeping records.

Should we consider that safety is installed in the small plants when we get the owners to keep safety records? No, not by any means. The work has only been started. The records are not worth the paper they are written on unless they show constructive thought along safety lines in safeguarding the plant for the employees to work safely in.

A safety report should be made out once a week in each plant, noting that the plant was surveyed for the purpose of having complete safety for the employees to work in. Accidents should be reported, showing how they occurred and what has been done to eliminate similar accidents, care being taken to point out to the owner of the plant that the accident which occurred in his plant was another burden placed against his industry.

Safety devices for the various machines should then be explained to the owner of the plant. One factor in not having safety in small plants is due to the haste of many inspectors who, in making an inspection and seeing sub-standard guards being used which do not offer complete protection to the employees, allow their charity to overrule their duty in not making proper recommendations to safeguard. They may consider that it would entail a hardship on the owner of a small plant to insist upon keeping better housekeeping conditions or to change a sub-standard guard into a standard guard, which would offer complete safety and prevent the employees from being injured.

In the small plant you will usually find the employer working alongside of his employees exposed to the same dangers that may exist in the plant. The employer may tell you he does not need safety devices, as he shows a good example to his employees by closing down the machine while he is working on it.

The competent inspector or safety engineer can tactfully point out that other employers have done the same, and due to the always prevalent weakness of the human element employees would take unnecessary chances and receive an injury. Do we who are familiar with such accidents not know of accidents occurring from such machines unnecessarily? The employer has other cares and cannot always be with his employees; therefore safety should be provided.

When the owner of a small plant invests in a guard to be installed on a machine, and finds it is not giving the safety it

should give and the employees refuse to work with it, the owner usually loses interest in safeguarding that machine until the next visit of an inspector, whether he represents the State or an insurance company; by which time the owner usually has a very bad idea of safety and the guards which he bought. It has been my experience to meet such cases, and after explaining the situation to the owners of the plants I found I could get more cooperation from them and that they were willing to listen to how others are practicing and carrying out safety work in their plants.

Let us now consider how we should explain to the owner of the small plant his relation to the industry which his product places him in. For our purposes we will discuss the industry of bakeries. The same operation and nearly the same machines are in use, especially those machines that cause the most serious accidents to employees in that particular industry.

Where there is one large bakery, employing 150 employees, there may be fifty small shops within a radius of a few miles of the large plant. In the small plant we may find the average to be three employees, and the proportion of accidents that occur to the employees in the small plants may exceed that in the large plant, as it is a conceded fact that the small plants show a larger percentage of accidents than the large plants. This may be accounted for by the larger plants, as a rule, having organized safety work; while in the small plant it is usually ignored or relegated to a position of minor importance. Such being the case, what happens? The whole bakery industry is penalized by having the compensation costs increased, the services of valued and trained employees are lost and the community in which the employee lives loses its proportion of that man's earning power. When this fact is properly explained to the owner of the small plant his interest will be easier to obtain and to hold, while explaining to him the necessity of having safety in his plant. These remarks apply not only to bakeries, but also to foundries, machine shops, carpenter shops, painters, paperhangers and all other industries.

These remarks and ideas may be considered idealistic and may never be carried out in some plants, unless we have a State law to enforce safety in all its phases. It is my belief that the idea could be carried out through the Associated Industries and like organizations insisting on their members making out a safety report once a week. The reports should be kept on file and reviewed at least once every three weeks by either the State inspector or the insurance company's inspector.

Should the accidents warrant it the employer should be asked to assemble his employees, in order that the inspector may give them a short talk on safety, and no doubt it would be a good idea to have the inspector give the employees a few words on working safely.

Many accidents are attributed to carelessness, which I believe is a mistake, as wilful carelessness is a rare occurrence among the workmen. Lack of thought and reckless action are nearly

always the case of accidents, so it is a necessity to have owners of small plants install safety in the plant and preach it every day to remind those employees who might forget and wander on to the road of unsafe practices.

The workers in the small plants usually gravitate to the large plants and unless the lesson of safety is deeply rooted they will find it difficult to work safely with safe men in the large plant. Should a man be injured in a small plant he will find it difficult to get work in the large plant.

In conclusion I wish to emphasize the point that safety cannot be installed and maintained unless records are kept and an active interest taken in it by having short talks with the employees on safety.

If there are any of you here who can tell what this campaign has meant to them as an industry I am sure it would be much more interesting than anything I can say who have been in Buffalo merely gathering up the loose ends in the last thirteen weeks. I thank you. (Applause.)

CHAIRMAN HATCH: In the first two addresses we have heard about what The Merchants' Association in New York City is doing in this field and about what the Associated Industries is doing up-State. We are fortunate in having a representative of a strictly trade association of employers which has been conspicuously successful in stepping out of other lines of activity and "stepping on the gas" in safety work in that association. I refer to the Portland Cement Association.

I am now happy to introduce Major Henry A. Reninger, who is a Vice-President of the National Safety Council and who is Director of Safety and Welfare of the Lehigh Portland Cement Company of Allentown, Pa. (Applause.)

EXPERIENCE OF THE CEMENT INDUSTRY IN ACCIDENT PREVENTION WORK

By Major Henry A. Reninger, Director, Safety and Welfare, Lehigh Portland Cement Company, Allentown, Pa.

MR. CHAIRMAN AND GENTLEMEN: Your Commissioner has asked me to give you, in a brief way, the experience of the cement industry in accident prevention work and to outline the history and results accomplished.

In 1911 the president of the Cement Association was authorized to appoint a committee to study cement mill accidents. This committee made their first report at the annual meeting in December, 1912. In their report they recommended the adoption of a comprehensive accident reporting system and the preparation of a group of publications dealing with the safe practices and safety appliances in the cement industry. Both recommendations were adopted and the foundation laid at that time has been the backbone of our safety activities. They called in specialists on acci-

dent prevention work who outlined a plan, worked up the publications and in 1914 the committee secured an experienced safety engineer and the Bureau of Accident Prevention and Insurance was organized as a regular Cement Association activity.

Our problem in the early days was just the same as many industries are facing today. We had a hard time to convince many executives as to the value of safety work and the reporting of their accidents to the association. It was a case of educating the executives, and it was only after gathering the statistics of those companies who were doing real safety work that we were able to convince many of them as to its value. Those of us who had been in the operating end of the cement plants and knew the hazards and accidents of the industry could appreciate the value of accident prevention work. Quarries, coal houses and the various conveyors caused many fatal accidents and total permanent disabilities. While we do not have the records of the various plants in the early days of accident prevention work, the cement industry and the association have a very complete record from the year 1919, and it is very gratifying to us who have been working steadily at the problem to see the reduction that has been made during the past eight years.

Many people have asked the question, "How were you able to get results in the industry?" There is only one way that results can be obtained and that is, at first the executives of a company must be sold absolutely on the idea of safety, and until the official order comes from the general office to the plant management you do not get anywhere no matter if the operating manager or superintendent himself believes in safety and he will not go ahead with the work unless he knows he has the backing of his executives.

It has always been my endeavor to interest executives and officials in safety work from the humanitarian side. However, when this fails the only thing left to do is to show them actual figures and facts as to what accident prevention means to them in dollars and cents.

We cannot lose sight of the fact that in all organizations, whether large or small, the management is at the head of the organization, that they are responsible for the use and expenditure of money and they are expected to produce money for their stockholders and owners, and we cannot blame them entirely if they cannot see the value of safety when presented to them from the standpoint of sentiment. Manufacturing conditions and costs have reached that point where they feel their entire effort must be put into production; therefore, if the humanitarian side does not appeal, we must endeavor to show them that safety pays big dividends and helps them in production.

Every executive, no matter how busy or hard-boiled he may be, is more or less interested in his employees. In the old days, before consolidations and large organizations, the superintendent, the manager and even the president of the company knew many of his employees by name. That is not the fact today and few of

the executives come into personal contact with their men; therefore the personal contact between men and Management has been lost, but today with the safety movement we have been able to revive and bring back that personal contact, and the organizations that are doing real honest safety work are beginning to realize and benefit through it.

In our own organization our executives believed in safety, but like many other executives of big corporations they did not have the opportunity and time to go into the detail work. However, they were willing to grant any requests and to approve any suggestions that were made along accident prevention lines. It was only after several years of real hard work, however, that we were able to show them actual facts and figures obtained in accident reduction, but when they were presented to them they began to see the real value of the work and then came out whole-heartedly and in the strongest language on behalf of safety.

It was in the Statler Hotel at the National Safety Congress several years ago that our president attended his first National Safety Congress, and in his speech to the Congress he came out with the statement that safety was just as important in the cement industry as a laboratory or a boiler house and that the foremen were just as much responsible for the safety of their men as they were for production. In our own organization, with the responsibility of plant management and operation and production, every superintendent is just as much responsible for the safety of his men as he is for any other part of his work. When we can once get officials of an organization to put an order out to all their plants like this, then we can feel that the plant management and the men will be willing to go along and do their part.

In a report that I worked out some time ago and showed to the president of our company as to the number of men employed, I brought out the fact that in our organization of which he was the responsible head we had over 6,700 children under 16 years of age; that they were dependent upon him in many ways for support and education. This report made him realize more clearly than anything that has ever been presented to him the responsibility that was resting upon him for the protection of his employees.

I have found that if we have been able to convince the executives as to the value of safety work their superintendent and foremen are only too anxious to fall in line and carry on this work. The cement industry has been working continuously since 1914. Statistics are not very interesting I know, but if I may be able to give you just a few figures on the results in this industry I think you can see what can be accomplished through hard concerted action.

In 1919 sixty-seven plants operating 48,000,000 man-hours had 2,119 lost-time accidents, with a total of 33,738 days lost, which was 69.2 days lost per 100,000 man-hours, with thirty-eight fatalities or one fatality for every 1,282,000 man-hours. In 1926

with 124 plants reporting, with 97,380,000 man-hours, we had 2,174 lost-time accidents, a total of 44,181 days, or 45.3 days lost per 100,000 man-hours, with forty-five fatalities, or 2,164,000 man-hours per fatality.

These are the figures for the cement industry in our own organization, and I trust you will pardon me for bringing these figures out, but it gives you an idea of what can be done in a smaller organization. In 1919 with thirteen plants operating 10,490,000 man-hours we had 414 lost-time accidents, with a total of 62,011 days lost, with 59.2 days lost per 100,000 man-hours. Seven fatalities, or one fatality per 1,498,000 man-hours.

In 1926 with twenty plants operating 15,430,000 man-hours we had 151 lost-time accidents, with a total of 31,228 days lost, or 20.2 days lost per 100,000 man-hours. Seven fatal accidents or one fatality for every 2,204,000 man-hours' work.

How is this work accomplished? In the first place, as we mentioned before, by interesting the executives, then the plant management, the foremen and then the men; by keeping in close personal contract with the various plants, by the use of National Safety Council Bulletins, Safety News and various publications; by the organization of safety committees and placing the responsibility upon the general committee as well as the various subcommittees; making the foreman responsible for the operation of his department and the safety of his men. Safety campaigns have been a big help in educating people in the cement industry.

The first campaign our organization held in June, 1921, five plants went through the month of June without a lost-time accident. In the June campaign of 1927 twenty plants went through the month without a lost-time accident in the cement industry, 133 plants out of 167. Competition in big plants between themselves and in those organizations with more than one plant, competition between plants and in the cement industry, competition between all of the plants in the industry, all of these have helped interest management and men.

In December, 1922, a committee of five operating men met in Albany, N. Y., and outlined rules and regulations for a competition in the cement industry to award a trophy to the plant making the best record for the year 1923. That record was to be based on the smallest number of days lost per 100,000 man-hours. At that time not any of these five men ever expected it would be possible for any plant to run a year without a lost-time accident. The trophy to be awarded was to go to the mill making the best record; two of the men of the safety committee of that plant were to attend the meeting of the Cement Association to receive the award. The first trophy was awarded to the San Antonio Cement Company, with a record of approximately six days lost per 100,000 man-hours. When that record was published we felt that any mill would have a difficult job to make a better record than that. In 1924 one plant and in 1925 two plants operated without lost-time accidents, and in 1926 two mills went through the entire year

without a lost-time accident, and the latest advice from the Cement Association shows us that there are twelve mills in the Cement Association that have a clear record up to November 15, 1927. Each of these mills, if they finish the year, will be entitled to a trophy and two men will have their expenses paid to attend a spring meeting of the Portland Cement Association, wherever this meeting may be held. The awarding of these trophies will mean considerable expense, and during the early part of the year it was suggested that the rules be changed, but I am glad to say that at the annual meeting of the association held in Chicago the Board of Directors passed the recommendation unanimously of the Committee on Accident Prevention and Insurance that trophies be awarded to each mill making a clear record.

In addition to the twelve mills that are still entered in the competition there are several more mills that have gone 365 days without a lost-time accident, but they have not been in the calendar year, and are now to receive certificates.

What a remarkable change has taken place in the industry! This has been due to careful, honest accident prevention work only and we are beginning to realize that quarries and the plants themselves can be operated without maiming and killing their employees. I think a careful study of all accidents reported would show that 95 per cent of the accidents occurring were due either to the man injured or a fellow-employee being careless and not having his mind on his business. Less than 5 per cent of the accidents are due to mechanical defects.

It is very pleasing to those of us who are spending our whole time in accident prevention work to see other industries getting together and working along similar lines. The results of the National Safety Council show you clearly that industry is doing its part in the prevention of accidents. The big problem that you and I have today is the education of those people outside our industries to realize the hazards that we have on the highways, in the schools and in the homes. Our four problems today are the education of the children, the education of the people in the homes and the education of the general public in all three phases. Industrial safety is being taken care of. However, the real job of the entire safety problem falls upon the shoulders of industry, for they are the only ones who realize the importance of the work. They have been educated to it and they must be the pioneers and do the hard work in the other three branches of safety. We must broaden out and give our time and effort to educating those who do not realize the hazards that exist today. (Applause.)

CHAIRMAN HATCH: Before introducing the next speaker on the printed program for this morning I want to let you know that that will not be the end of this morning's program. We have two other speakers here with most interesting and valuable papers which were on for the session yesterday, but the authors were unavoidably detained.

On any program where private insurance companies are represented you cannot consider you have a well-balanced program unless you have the State Insurance Fund represented. In order to keep harmony in the insurance world we are going to have a representative of the State Insurance Fund address us. That is not the main reason for having the State Insurance Fund on this program. The real reason is that the State Fund, as I happen to know rather intimately, is one of the large and progressive and aggressive promoters of safety all over the State of New York.

You are fortunate that I am able to introduce Mr. Charles G. Smith, the Manager of the State Insurance Fund, who will discuss a particular phase in accident prevention work, namely, the duty and opportunity of the employee. (Applause.)

THE EMPLOYEE THE KEY-MAN IN ACCIDENT PREVENTION

By Charles G. Smith, Manager of the New York State Insurance Fund

MR. CHAIRMAN, LADIES AND GENTLEMEN: It is very encouraging for a representative of an insurance carrier to see so much interest being taken by the representatives of the employers. You have heard this morning of the activities of the Merchants' Association of New York City and the Associated Industries of Buffalo. I think they are both doing splendid work. The Merchants' Association appears to be a newcomer in the field of accident prevention and although Mr. Dodge compared his activities to revolver shooting, it seems to me that they are more like machine-gun work.

Perhaps in the Congress to be held next year we will be able to have a competition between the Associated Industries and the Merchants' Association, with the loser awarding a trophy to the winner.

One phase of the discussions at this Congress which has particularly interested me is the amount of interest which is being given for the first time, as far as I know, to the differences between small and large risks. That is becoming a very live subject today. On the first day of the Congress a paper by Commissioner Stewart of the United States Bureau of Labor Statistics was read by his representative, in which he drew an alarming picture of the plight of the small risks. It seems to be becoming generally admitted that the small risk in compensation insurance represents a distinct problem in itself. This has been felt for some years past, but it is only within the last year or so that the problem has been intensively studied.

It is a real problem; however, I think that Commissioner Stewart drew an unnecessarily alarming picture in two or three respects. In the first place I think it will not be found that many small risks are unable to obtain compensation insurance merely because they are small. In the second place Commissioner Stewart seemed to believe that State funds, and particularly the New York State Fund, were without any defense against what he seemed to

regard as an influx of small undesirable risks from the private companies.

As I explained in my last report covering the calendar year 1926, in the New York State Fund we are not at the mercy of such an influx. Assuming for the moment that many small risks may be undesirable, we have ways and means of dealing with that situation and we are using those means. There is no need to be unnecessarily alarmed as to the effect on the New York State Fund. Of course I cannot speak for other State funds.

Furthermore, the whole subject of the rating of small risks is being very intensively studied in the State of New York and also in other States. A committee is now in session (of which I happen to be a member) which is laying out a new program for the rating of compensation risks and it is probable that before long a program will be submitted to the Superintendent of Insurance for his approval which will be intended to recognize the difference in insurance cost between large and small risks.

Of course, as you know, risks generally are experience rated if they are above a certain size. Below that size it has been impossible to experience rate the risks. The present situation, however, seems to make it necessary to experience rate these small risks in the aggregate, as it were, by rearranging the rating scheme. More than that I cannot say at the moment because the committee has not yet completed its work and we, of course, have no means of knowing what the further action will be on it.

Nevertheless, I would say that Mr. Stewart's picture is one worthy of consideration by the small risks. Today, owing to the conditions which exist in industry, the small establishment is under a severe handicap in competing with the rapidly improving methods of management in industry, which naturally the larger establishments are better able to put into force. With the constantly decreasing margin of profit, under which these establishments are forced to operate in competition with the larger ones, it becomes necessary for the smaller establishments to scrutinize very carefully every item of waste or inefficiency.

The compensation cost in the case of these risks is only one item of efficiency or inefficiency. It is an important one, but there are others, possibly more important, one of which is the incidental cost of accidents, which, as we have heard several times within the last two years or so, is believed to be about four times the compensation cost of the accidents themselves. If that is true it is easily seen that the small risk is up against a pretty severe handicap in competing with the large establishment. Until the small risks adopt modern methods and work on a more efficient basis more and more of them will be forced into the hands of receivers and in that way will leave the field open to the larger establishments.

Many speakers at this session of the Congress have indicated their belief that the most pressing need at the present time is for the appointment of more inspectors by the State. Of course I

have no data on which to base my conclusions that more inspectors are not needed; I suspect they are needed. Nevertheless, I would like to point out there is a limit to profitable police work. When you push that beyond a certain point it reminds one too much of the one popular phrase, "Let George do it."

In our self-reliant American civilization is not every man in the first instance his own best safety inspector and enforcer of safety standards? What is to be thought of the individual employer or employee who deprives himself and others of the benefit of safe practices developed by experts simply because no inspector happens to be standing around to shake a warning finger at him? Is this not "standing the pyramid on its apex," as Mr. Ballantyne of Ontario said? In other words, there is a limit beyond which you cannot accomplish anything by stationing a policeman around and having him shake his finger at employers and employees. The individual has to make himself primarily responsible.

Doctor Slater of Rochester, in the course of a very interesting talk, presented a most illuminating analogy. I will not repeat his analogy, but the moral I drew was that it is not enough merely to prevent accidents; we should not permit near-accidents. A near-accident is, but for good luck, a real accident. Until we succeed in cutting down near-accidents the fundamental psychological difficulty has not been solved. If the facts regarding near-accidents could be made available, I think the resulting analysis would be extremely fruitful. Many of these near-accidents are accompanied by the heavy incidental costs that we are now learning to connect with real accidents, so that their elimination would have an extremely practical bearing on the cost of production.

I think you will find that the majority of individuals engaged in the work of accident prevention are in accord that the employer must first be brought to recognize his responsibility in protecting the lives of his workers, and a campaign of safety must necessarily have its beginning in his office. The cost of accidents has a direct bearing on production costs, and the employer who undertakes the prevention of accidents in a sincere and energetic fashion reduces one of his overhead items, which reflects itself in the ultimate price of the product and thereby enables him to appear in the competitive market to better advantage. This perhaps is the most forceful argument and when appreciated by an employer usually causes him to see the need of safety in his plant, not only for the worker's good, but for his own benefit.

However, to simply convince the employer of the need of accident prevention will do little toward the elimination of accidents in his plant. The worker too must get a vision of the good and happiness that will come out of a hazardless plant and careful workmen. I have therefore chosen as my topic "The Employee the Key-Man in Accident Prevention."

Past experience indicates that it is necessary for the employer, wherever possible, to safeguard by mechanical means exposed

mechanical hazards. There is no question but that this guarding is necessary and important, enabling the employee to better protect himself. However, many now realize that complete guarding of mechanical equipment alone will not fully solve the problem of accident prevention. That the employee is the key-man is my contention and I am becoming more convinced each day that many of the methods in safety work will have to be revised and based upon a more comprehensive understanding of the facts involved. In support of my contention it is significant that universities are now presenting courses in accident prevention. The approach will be made, however, not to the machines but to the human element, that is, to the employees.

You have already listened to so many statistics that I will not burden you with the number of injuries and their cost in the course of a year. The significant fact is that according to expert opinion not more than 10 per cent of these accidents could have been prevented by installing additional or improved mechanical guards. If we reckon a like percentage to have been humanly unpreventable or due to what we call "acts of God," we still have the major part of them chargeable to failure of the human factor. In my judgment the place to attack this problem is with the employee, by selecting the right man for the job, selling him and keeping him sold on safety, by making accurate reports of accidents and by encouraging the safety inspector and the safety committee.

In the selection of employees much can be done by means of job analysis, so that the employment man during an interview can develop a picture to fit the prospective employee into by leading questions. The sociological background of the employee can be obtained and some idea of his susceptibility to accidents can be formed. Formerly in the analysis of accident causes a large percentage of employees' injuries was charged to so-called "carelessness," or a better term would be "thoughtlessness," and we have been prone to accept this cause as sufficient explanation and stop there. Some, however, have been unwilling to accept this as an ultimate cause and through research have developed the fact that frequently accidents under this general heading can be further traced to psychological and sociological causes. May I cite one particular instance to demonstrate this point? In a plant which employed approximately 1,000 people there was a tunnel which connected two buildings. This tunnel, about eight feet in width, was used for transporting the product from one building to another. Shortly after the making of a maintenance inspection of electric light bulbs and fixtures, one of the bulbs illuminating this tunnel burned out, leaving the passageway in semi-darkness. An employee charged with the responsibility of carrying the product through the tunnel by hand truck, after delivering his load at one end, dropped his truck so as to obstruct the opening and left the handle lying down. Another employee similarly engaged in pulling a truck stumbled over the handle which was lying across the alley, fell, struck his head against the edge of the truck, causing a very severe laceration

of the forehead, and his truck being loaded and having gained some momentum passed over his leg, causing a compound fracture. The accident report made by the foreman indicated that the cause of the accident was carelessness in leaving the truck across the passageway. Further investigation disclosed the fact that the bulb nearest to where the truck had been left had burned out, which was a contributing although not the real cause of the accident. Why should the employee leave a truck so as to obstruct the passageway through which he was continually traveling? Upon investigation it was found that in his home he was attempting to take care of a wife threatened with tuberculosis and two small children seriously ill with pneumonia, and that the whole night prior to the accident he had spent nursing them. The man's mental condition, arising out of a difficult social situation, was recognized as the primary factor in the cause of the accident. While we cannot undertake here to state what should be done to prevent accidents arising from such a cause, it is evident that the existence of a mental preoccupation represents a distinct increase in the accident hazard wherever work is being done. Much can of course be accomplished by rational selection and placement of employees. It would have been a comparatively simple matter to avoid the accident had an employment man been able to inquire regarding the sociological background or the home conditions of the employees.

Once he has chosen the best available candidates, then there must be a continuous effort made by the employer to convince his workmen that accidents must not be allowed to occur. The commonly accepted method of bringing this most forcibly to their attention is through the establishment of a safety committee and its consequent inspections. It requires team work on the part of employer and employee and constant vigilance must be exhibited by both sides if results are to be expected.

A further step in the solution of this problem seems to me to concern the activity of the safety committee, which, as I have said, must have the cooperation and support of the employer. Many real safety organizations have been formed, but some are found to be simply paper organizations formed as an attempt to obtain from the Rating Board a schedule rating credit which will reduce compensation insurance premiums. Such organizations are only paper organizations in my mind because a definite program of genuine activity has not been established. Their work in many instances consists of a weekly review of all the accidents which have occurred and an inspection of the locations to determine the causes. This is a wise activity, but what happens when there are no accidents or the accidents are of such a trivial nature that interest is lost, especially when the boss is driving for more production? The safety inspector of the committee generally is the master mechanic or chief engineer or machine shop foreman. Now, suppose that he lives daily with the mechanical equipment and knows the plant so well that he cannnot see the hazards, or else correction of the conditions involves considerable loss of time,

or the management has set up budget figures for maintenance which he believes will be exceeded if he tries to correct them. Such a man when he comes to a committee meeting will not be very enthusiastic in his report and it is doubtful, in my mind, if it will contain any real constructive help. If, however, an interesting program is undertaken which will not only save accidents directly and correct hazards but indirectly raise the morale of the entire plant, then I am convinced the plant safety committee will amount to something. But some will say, "What specifically can they do?" I think that the old adage "A fool can ask more questions than a wise man can answer" may be applied here. Why not try out as safety inspector some one not familiar with the plant operation?

One of the largest industries in this country selected through its employees' organization such a person, and let me cite a few of the results:

Stairways at the corners and on the landings were found to be covered with expectorations and litter. These corners were painted white and at each landing a box of sawdust was placed and an arrow painted white pointed to it: Result, clean stair-tread corners and landings.

The seats of the employees while at their tables were invariably high stools with no backs, requiring considerable acrobatic ability to stay perched upon them. Then, the employee's legs twisted in some mysterious fashion about the legs of the stools. This was corrected by cutting off the legs of the table so that a chair of the usual height might be used.

Again, glaring, powerful lights were found suspended over the work, creating a tremendous eye strain and deep shadows, all resulting in fatigue, imperfect workmanship and waste of current: Result, a study made to determine what the proper foot candle requirements were, and the lighting fixtures changed to give indirect illumination, reducing shadows and eye strain.

The walls were as usual dull and grimy and absorbed much light, as well as having a depressing reaction on the employee, which could not help but result in dissatisfaction and high labor turnover. The painting of walls just a shade off of white and a gray wainscoting about five feet from the floor resulted in removing the gloomy aspect and caused a beneficial effect on the workers.

Aisles were found to be stacked irregularly, causing tripping and stumbling hazards: A white line was painted on the floor indicating the limits to which materials should be piled. This resulted in an orderly arrangement of material and proper classification of stocks.

Does all this have any relation to safety and the elimination of accidents? I think it does, and a very direct relation. It also gives the safety committee real constructive work to do, and compliance by the management with their suggestions doubles their loyalty and enthusiasm.

In this discussion I have endeavored to show that the employee is the key-man in the prevention of industrial accidents. The State Insurance Fund is carrying on a program of accident prevention among its policyholders following very largely the thoughts expressed in this discussion, and that they have been proven successful is borne out by many examples which it would be possible for me to cite, but such evidence would prove wearisome and I am therefore going to presume upon your time only a bit longer to cite a few of the many.

Here is a risk that came to the State Fund in 1925 with an experience charge of 31.5 per cent. Incidentally this risk is in Buffalo. In 1926 there were 262 accidents reported, while for the first ten months in 1927 there were fifteen accidents reported, only two of which were lost-time accidents. Then I have an exhibit of accident frequency which I will not read into the record. The reduction in severity and accident frequency is very noticeable in this plant.

Here is another plant with seventy employees engaged in woodworking. Safety work started November, 1926; the accidents reported in 1926 were thirty-seven in number. Other meetings were held and a safety committee organized. During 1927 to date there have been two lost-time accidents. These results were accomplished entirely through the change in employees' mental attitude towards safety, as no changes were made in machines or machine guarding.

Here is another woodworking plant with fifty or sixty employees. In 1926 they had five accidents; safety organization work was started, and by machine guarding and credit for safety work the schedule rates were reduced 23 per cent. During 1927 to date there has been only one accident.

Here is a risk engaged in milling of grain, with about 200 employees. This plant is an example of the reduction in losses made possible by safety organization work. The losses in the 1923 policy year were $14,520, in 1924 $957, and in 1925 nothing. The experience charges commencing in 1923 were 78.1 per cent, 77.2 per cent, 87.4 per cent and for the 1927 policy year 7 per cent, a reduction of 80.4 per cent. This accident prevention work was carried out by a committee of foremen and the results were accomplished entirely by educational work and supervision, not by making physical changes in the plant or guarding the machinery. For the ten months in 1927 there have been only two accidents reported.

Here is a mason contractor. During 1926 the risk had fourteen accidents, but through educational work these were reduced to three for 1927 to date. The number of employees varies with contracts on hand, but the exposure during 1927 is likely to be greater than it was in 1926.

Ninety policyholders insured in the State Fund, each with more than 100 employees in all, with over 21,000,000 man-hours,

exposure during the first ten months of this year and approximately the same exposure last year, who have maintained safety organizations in their plants, show, comparatively, 1,358 lost-time accidents in 1926 and 1,104 in 1927, a reduction of 18.7 per cent in lost-time accidents in these ten months. Deaths in the same periods were three in 1926 and two in 1927.

We not only assist the employer by a very definite consulting service along the lines discussed, but we go further. In our New York office is maintained a department to which injured men are sent for examination, and through physiotherapy and other methods many are promptly returned to gainful occupation. In this connection I would like to cite a few instances which are rather remarkable in that the results obtained are unique.

"A" suffered a fractured right ankle by having a box fall upon it. After the ankle had been placed in a plaster cast and the bones had apparently knit, a very decided restriction of the ankle resulted when the cast was removed, and it was impossible for him to walk. He was admitted to our clinic on July 20, hopping painfully upon crutches. After a remarkably short time, approximately two weeks, he was discharged from the clinic August 4, able to walk with a slight limp.

In another case "B" suffered from varicose ulcers. He had been treated for approximately a year and a half by various physicians and very little improvement was noted. He was admitted to our clinic October 4 and after intensive treatment was discharged on February 21, cured.

A young girl employed as a presser in a steam laundry, while operating a machine, had her hand caught underneath the top of the machine, causing a third-degree burn of the left dorsum of the hand, wrist and forearm, fingers, thumb and anterior surface of the wrist. The flesh was burned a quarter of an inch deep. After the wound had healed there was a great scar and adhesion, resulting in stiff fingers and little or no function of the hand. She was given a number of treatments and when discharged she was able to make a complete fist.

These instances are evidence of our service to the employee and incidentally to the employer in reducing his compensation cost by returning the injured employee to gainful employment at the earliest possible moment, and may prove of interest to those in the audience who may not yet be aware of the completeness of the State Fund program of accident prevention and rehabilitation.

I now have one or two suggestions to make as to ways of improving the safety work. One is for the carrier to inspect the various plants shortly before the time of peak accidents. Analyze the accidents in any given industry and you will usually find that the highest frequency occurs in a particular month or months. When that time has been discovered by analysis, if you will have your inspection made a month or two before that, the inspection will undoubtedly be most effective.

Turning again to one of the small risks. The carrier's safety service representative going into the small risk, as has been said, is up against a severe handicap because of the employer's lack of interest. That simply means that the safety man has to be a little more of a salesman. He must show that he knows that employer's business, or many of the details of it, pretty well. If he is able to give him information as to methods used in other plants of the same character, in connection with safeguarding of machines and various other devices, proper housekeeping and adequate illumination, the employer of the small risk will welcome his visit and the ground will be prepared for his suggestions.

The safety engineer should examine the machines that he finds in the various plants to see whether they are properly constructed from the standpoint of safety. Where they are not so constructed he should report the facts back to his office in order that the manufacturer can be communicated with and this fact brought to his attention, so that the machine may be properly designed. Naturally that is a slow process unless he happens to be in contact with a particularly enlightened manufacturer, but it usually pays from a human as well as an economic standpoint.

Another suggestion is for particular industries to have contests and award medals to employees who make valuable suggestions toward reducing the accident frequency in their industries. Naturally with the awarding of a prize the contests will prove very successful. That seems to be a means of selling accident prevention which has not been thoroughly worked out as yet.

In conclusion, I want to refer to a little incident which occurred at the Safety Congress at Chicago last September. I was attending one of the meetings there and a very interesting letter was read from a vice-president of a very large corporation which had branches in many States. This letter was sent broadcast to the managers of the various plants. The gist of the letter was this: "I am sick and tired of safety committees, safety education, posters, what not, all the methods that are being used to sell safety! All that is going to be scrapped in our corporation! I am going to hold the managers of the plants personally responsible to me for having accidents in their plants."

We found that a very interesting suggestion because apparently it is in direct conflict with everything that has resulted in the best plant accomplishments of today. It seems to be a step backward, an attempt to use the "big stick" method, trying to compel a man to have no accidents while at the same time depriving him of all the machinery through which he has been accustomed to sell safety to his employees. I have not heard any such suggestions made at this Congress and I hope I shall not. I think the point is that instead of going backward in these respects we should go forward. Let us not scrap any device or any plan that has been found useful in expressing our ideas and spreading safety methods.

I thank you. (Applause.)

CHAIRMAN HATCH: One of the important papers that was to have been presented to this Congress on "Handling Objects and Falling Objects" was to have been presented yesterday by David Van Schaack. Mr. Van Schaack was unable to be here yesterday morning because of the fact that he is ill due to overwork in connection with the New England Flood Relief. I think that is a sufficient alibi.

However, we are fortunate in having here today one of his staff, Mr. Ralph E. Prouty, who is Supervisor of the Special Risk Division of Mr. Van Schaack's bureau, and who will now read his paper. (Applause.)

MECHANICAL HANDLING OF MATERIALS AS A MEANS TO REDUCE ACCIDENTS

By David Van Schaack, Director, Bureau of Inspection and Accident Prevention, Ætna Insurance Company, Hartford, Conn.

(Read by Ralph E. Prouty, Supervisor, Special Risk Division, Ætna Insurance Company)

MR. CHAIRMAN, LADIES AND GENTLEMEN: We are shocked by a catastrophe whether to human beings or to property, but we pay little or no attention to the untoward happenings of day to day unless they chance to come close to us personally. A Japanese earthquake, a San Francisco fire, the death of many men in a mine disaster, the wrecking of a building by explosion—any one of such events as these will awaken our sense of responsibility, and urge us promptly to take remedial measures which will tend to prevent such occurrences, or, where they are unpreventable, to minimize their effect. The sum total of loss, however, involved in these infrequent catastrophic occurrences is as a rule relatively small in comparison with the aggregate of loss of life or limb or property from the daily destructive happenings which make up by far the greater part of the large drain on our national resources due to accident.

This is just as true in industry as it is elsewhere. It is not the mine disaster which contributes most heavily to the compensation loss cost in mining. It is the falls of roofs and other mine accidents occurring from day to day throughout the year. In all the range of occupations covered by Compensation Law it is not the occasional accidents involving a number of men which figure most in the total of costs. It is the accidents happening steadily throughout the year to one man after another.

I always approach statistics with the hesitancy proper to a layman, for they are very apt to be fearful and wonderful things, and the wide variety of thought shown by our statisticians is apt to leave the layman wandering in a maze of bewilderment. At the same time statistics are the necessary basis of all constructive effort, and those dealing with accidents and compensation which are compiled by your Department of Labor are especially illuminating in

connection with the subject which we are considering today—"Handling Objects and Falling Objects."

Just as the catastrophe makes more impression off-hand upon the human mind than does the ordinary accident, so does machinery at first thought seem to be naturally the outstanding cause of accident loss, so readily apparent are its dangers. New York statistics, however, prove the contrary. In the two years 1924–1925 and 1925–1926, there were 4,765,491 weeks of disability resulting from accidents which were compensated. Total weeks of disability, as your statisticians so clearly point out, is the best measure for showing the relative seriousness of different accident causes, for it reflects both frequency and severity of injuries, and it is not affected by variations in wages nor by changes in the compensation allowed by law. In producing all the weeks of disability in the two years mentioned, machinery, as your statisticians classify it, ranked fourth as a cause, the first being falls of persons, the second vehicles, and the third handling objects. Machinery would rank second if your statisticians included under this heading hoisting and conveying apparatus, but, as classified, machinery accounted for 12.4 per cent of all weeks of disability during the two years, while falls of persons accounted for 22.8 per cent and handling objects, in which we are today particularly interested, accounted for 13.1 per cent, with falling objects accounting for 7 per cent.

Considering the accidents in the latter of these two years solely from the viewpoint of frequency, your statistics show that handling objects caused the greatest number of accidents in all your industries, as well as manufacturing, construction and mining and quarrying.

The importance of your giving your most serious attention to the handling objects and falling objects causes of accidents is plainly evident from the statistics, and is emphasized by the fact that whereas machinery accidents three year ago stood first in manufacturing, with 30.5 per cent of the total, they declined last year to second place, with the percentage of 27.3, while the handling objects accidents cause increased from 25.3 per cent to 28.3 per cent.

Even such good statistics as those of New York are unable, and unavoidably so, to show clearly the full effects of such broad accident causes as are outlined in their classifications. Falls of persons, for instance, do not, and properly cannot, take account of such falls as those into elevator shafts, which cause a large part of the disability due to hoisting and conveying apparatus. Handling objects cannot take account of accidents due to the handling of objects by hoisting and conveying apparatus; the same is true of falls of objects.

It seems to me, therefore, that when we consider the subjects of handling and falling objects, and especially the former, we must give consideration not only to the accidents classified under these headings by your statisticians, but also to the accidents in which objects are involved due to the operation of conveying and hoisting

apparatus and, in fact, all methods of handling objects other than merely by hand.

It is not surprising that handling objects should figure so prominently as an industrial accident hazard when we pause to appreciate the fact that such handling follows the product of the forest, the field, the sea, the mine and the quarry through all the processes of our workshops until they are ready for our sustenance, comfort or convenience, when we consider that it covers the handling of materials of all kinds, raw or in process, in bulk or when handled in individual units whenever or wherever they are capable of being handled manually or mechanically, and all movements of these vertically or horizontally when continued through distances which would not ordinarily be classified as transportation. Handling of objects is found in one form or another in all of the about 800 classifications covered by the insurance rate manual.

I personally am inclined to believe that for safety as well as efficiency objects should be handled other than by hand wherever practicable. Mechanical handling is constantly finding increasing favor. Beside the special handling systems used in vessel and car loading or unloading, in coal or ash handling and the like, there are in use the several types of cranes, overhead traveling, gantry, locomotive, jib, pillar, monorail systems, etc.; freight elevators, dumbwaiters, whip hoists, portable elevators; all sorts of conveyors, including bucket, belt, screw, roller, chain, pneumatic, drag and gravity chute; chain, pneumatic and electric hoists; derricks; cableways; industrial locomotives of various kinds, trucks, tractors and trolleys. New hazards of mechanical, electrical or other nature are introduced by such methods of handling objects, but these hazards, I think, can be coped with more readily and more authoritatively than those which are solely dependent upon or are more largely affected by the human factor in industry.

It would certainly seem that the substitution of mechanical means of handling objects would, generally speaking, greatly reduce the body of exposure to accident, would tend to decrease considerably accidents due to fatigue, would eliminate many accidents caused by handling sharp or rough objects, and would tend to minimize the number of strains resulting from the handling of heavy objects, which are such an important factor in accident occurrence and severity.

Conveyors and other mechanical means of handling objects tend to displace unskilled workers who are generally slow-witted and unresourceful in the face of danger. Mechanical handling, too, diminishes exposure to dangerous chemicals, whether in transporting them or using them for immersion, and it makes possible the isolation of workmen from such operations as sand-blasting, or other work with abrasives. It is used too in operations where high temperatures are unavoidable, to isolate the operators from exposure, or to handle the objects while they are in a state of high temperature or until they are cooled sufficiently to be safely handled manually.

General statistics are not available for a measurement of the relative accident hazards of handling material by manual methods and by those other than manual. This is doubtless due to the fact that installation of mechanical methods of handling is usually gradual and it is difficult to find comparable records covering conditions before and after. There are instances, however, of individual plants showing that substitution of mechanical means of handling objects for manual ones has resulted in a marked reduction in lost time on account of accident.

At first glance it might seem that the more serious accidents involved in handling objects occur when they are handled by mechanical means. For instance, your New York statistics for the two years I have referred to show an average of seventy weeks of disability per accident in connection with hoisting and conveying apparatus as against thirteen weeks per accident when objects are handled otherwise. These statistics, however, include under hoisting and conveying apparatus a very considerable amount of lost time resulting from such occurrences as falls of persons into shafts, accidents which are due to the installation of such apparatus rather than to the handling of objects by them—accidents moreover which can be affected more authoritatively by provision of safety features than can the ordinary run of accidents due to handling objects. Even if these were attributable directly, however, to handling objects the aggregate of lost time caused by accidents due to manual handling is much greater than that caused by accidents due to other methods.

As I have said, new hazards in connection with the handling of objects are introduced when objects are handled mechanically, but they can in large part be coped with more readily and more authoritatively. By this I mean that the employer and his engineers can eliminate more of them with proper design and installation and adequate safeguarding, and that safety rules are more readily adapted to them.

I am not going to discuss these mechanical methods of handling objects and the safety equipment which should be provided in connection with them. These matters, I understand, will be treated by other speakers. With your permission, I shall confine myself to a brief discussion of some of the phases of handling objects manually, and the manual part of handling objects otherwise, with only a very general reference to falling objects. Even at this, what I have to say must necessarily be rather sketchy, and incidental. It would be impossible to undertake to cover anything like fully even these limited topics without taking up entirely too much of your time.

Safety in the manual handling of objects, and often quite substantially too in their mechanical handling, depends very largely upon control of the human factor. No matter what equipment designed to make manual handling safe may be made available by the employer, no matter what rules he may make requiring the use of such equipment, the full cooperation of his foremen and

workmen is necessary. No matter how excellent the installation of mechanical means of handling may be, no matter how completely it is safeguarded, accidents in such handling of objects will occur unless both foremen and workmen also do their full share in preventing them.

Ingenuity by the employer and his engineers in taking advantage of gravity possibilities for moving objects, and of other simple means of eliminating purely manual handling or making both that and partly manual handling safer can be of much help and should be exercised whenever possible. Among such simple means may be mentioned keeping floors in good condition for movement of both trucks and men, attachments to truck handles to hold them in an upright position when the truck is not in use so as to avoid men stumbling over handles lying on the floor, knuckle guards on barrows or two-wheel trucks to prevent contact of hands with fixed or other objects in passing, selection of trucks of substantial construction and adapted to the work in hand, provision of broad aisleways for movement of objects—marked when possible so that stuff piled will not encroach on them—good housekeeping to prevent aisleways and floors being unnecessarily and dangerously cluttered up, provision of side stakes for trucks to hold light bulky material, and tie chains to prevent stakes spreading when heavy material is handled, and many other simple arrangements or devices too numerous to mention.

The human element necessarily figures so largely, however, in the handling of objects that I want to direct your special attention to the urgent need of influencing it along the right lines if accidents due to the handling of objects are to be reduced as they should be. I cannot, of course, undertake to give you specific cases of accidents attributable wholly or partly to the human element in each of the many lines of work represented here today, but I do want to mention some illustrations showing how the human element figures. The employer, for instance, may furnish well-made slings for hoisting, may have them frequently inspected, and may endeavor to keep them in the best of condition, but he is dependent upon his employees for careful attachment of slings to the load and to the hook of the hoisting cable, and for the use of enough slings, depending upon the weight and shape of the objects to be moved. He has to depend too upon his men or foremen to avoid use of slings which have got into poor shape since the last inspection.

The employer may furnish the best of trucks and wheelbarrows, well adapted to the purposes for which they are to be used, but careless loading or unloading of these may nevertheless result in accident. The employer may provide hooks, gloves or leggings for the work of removing small or medium-sized castings from sand, but if the workmen do not use these there will be many cuts, bruises and occasionally bad burns. No matter how many goggles and rubber gloves, aprons and boots may be provided by the employer for use in transferring small and medium-sized castings to

and from pickling tubs, there will be many eye injuries and flesh burns from acids unless the men make use of this equipment. The employer may furnish the best of hand ladles for carrying and pouring molten metal, but there will be many burned feet and legs if these ladles are not handled in the safe way. The employer may furnish the best of elevator equipment and surround it with all known safety devices, yet if loaded trucks are placed by the workmen too near the edge of an elevator they may catch against a stationary projection in the shaft when the elevator moves and cause an accident. A conveyor may be of the safest type, yet accidents will result from its use if material is placed on it so as to extend beyond the path traveled by it, or if the material is so carelessly piled as to fall from the conveyor. The most efficient derrick will not prevent the possibility of accident if an improper kind of sling or hook is used, or the wrong kind of hitch is made, and if the load which it is hoisting is unevenly balanced and, therefore, slips when it is hoisted. The handling of rough-sawed lumber or of glass, and the removal of metal chips and shavings to storage bins or extractors will result in many accidents otherwise avoidable, if the men do not use the gloves or hand leathers, the aprons, the hooks, the forks, the shovels, and the carriers which are such excellent preventive means.

Gas, oxygen, acetylene and carbon dioxide tanks under pressure can be moved to and from conveyances for transportation or storage with reasonable safety from explosion if the men use correct trucks, proper skids and cushions provided. So can acid carboys be handled without serious risk of acid burns to employees if proper carriers or trucks for handling are put to use. But many accidents will occur if hand carriers or trucks are not used, or carriers are not designed to support the weight of bottled acid from the bottom of the case, thus permitting the possibility of the carboy falling through the bottom while suspended. Even though suitable inclinators are used, the pouring of acid from carboys often results in bad eye injuries unless goggles are both provided and worn and splash-guard boards are used.

The careless placing of objects on belt and chain conveyors for transfer while they are in motion, and especially when they are not provided with side guards, often causes accidents both to those engaged in the work and to others who may be in close proximity to the apparatus. The moving of objects by cranes or derricks using chains, or other slings and hooks which must be attached and adjusted by hand, presents a great hazard, and, unless this part of the operation is properly done by one thoroughly competent, and the apparatus is kept in a safe condition to withstand the strains to which it will be subjected, accidents both to those engaged in the work and those who may be nearby will frequently happen.

Workmen are very apt to get hand cuts in handling small drop forgings which have rough edges or iron and steel stock having

sharp edges and burrs on it unless they take care to wear suitable hand leathers or gloves.

I think these illustrations are sufficient to prove the imperative need of full cooperation in accident prevention by employees, even where safety equipment is furnished by the employer or required by him in the manual of handling of objects fully or partially. Where such safety equipment is not possible or practicable that cooperation is, of course, even more necessary, for the avoidance of accidents is wholly dependent upon the foremen and the workmen. The danger in handling material by hand can be overcome to a considerable extent if the work is studied carefully and there is proper instruction in it and supervision of it by the foremen. A slight change from the usual method of grasping a piece, of carrying it, of setting it down, will often make for greater safety as well as greater efficiency. The foreman who is superintending a gang of men bringing a piece of machinery or handling a piece of material should instruct them in the proper method of doing the work, acting in the sense of captain of the team.

Just an instance or two: When heavy objects such as tanks are handled on an incline in either direction, not only should ropes or other tackle be used to control their motion, but the men should not be permitted to stand at a dangerous point on the downhill side.

What I have said about the necessity of cooperation by foremen and workmen is equally true in relation to falling objects, accidents from which are often not easily separable from those under the classification of handling objects. For instance, objects frequently fall when being moved by cranes or other mechanical means, not on account of anything being wrong with the mechanical means itself, but because of failure of the human element to do its part properly. Of course, the employer himself can and should do much to prevent accidents due to falling objects. Among other things he should see that elevated storage places, platforms or balconies are toeboarded, as well as railed, to prevent objects falling from them. Scaffolds or staging should be of sound construction so they will not collapse. Working places in mines should be timbered to prevent falls of roof. But, after an employer has done everything possible, much depends upon his foremen and workmen, especially perhaps in the piling of material. In fact, I think it is safe to say on the whole that this cooperation of the foremen and workmen is more necessary and can have more effect in connection with handling objects and falling objects hazard than in relation to the hazards affecting any other classifications of industrial accidents.

It is curious how much is apt to be taken for granted in the handling of men in industry. The most careful study is given to a machine while men, the most uncertain and at the same time the most important factor in both production and safety, are so apt to be considered as cast in one mould, and that not infrequently the mould in which their immediate boss was cast. One of the pioneers in safety work struck a keynote when he said, "The best

safety device is the safe man." Another put it that the greatest factor operating in the prevention of accidents is not the prevention device but the prevention spirit. The safety slogan which has the strongest appeal to me is "Get the safety habit." It is bringing about this safety habit which alone can prevent the accidents, the hazards of which are not controllable by mechanical or physical means. Of course, workmen do not intentionally get hurt, nor do they voluntarily cause injury to others. But ignorance and thoughtlessness are most prolific causes of accidents, and these causes can be affected only through a comprehensive plan of education, training and supervision.

The best means of educating the workman, as well as controlling him, is admittedly, I think, through the foreman. If you are going to prevent those accidents due solely or partly to the human element, the one man in whom you should be interested above all others is the foreman. If you can interest him, if you can help him to see clearly the causes and remedies of accidents, if you can make him feel that accident prevention is worth while, you will find that he is an invaluable assistant. If he will only give the matter serious attention he is in the best position to note the real hazards of the work, and to determine the true causes of accidents. It is he who can contribute most largely in the avoidance of accidents by carefully instructing the men under him in their work, by not assigning to work men who are unsuited to it, and by supervising thoroughly the work his men do. He is closer to the men than anyone else in the plant can possibly be, and his influence as well as his authority in inducing them to acquire the safety habit can be immense. He is also the one man who can promptly see to it that antiseptic treatment is given quickly to the small cuts and scratches which are due to the handling of rough or sharp objects, and thereby avoid many cases of blood-poisoning which often develop serious losses of time if not of limb or even life. The importance of enlisting the full cooperation of the foreman in accident prevention cannot be over-emphasized. Not only is his the authority closest to the men, but he is the natural teacher of the men and the example whom they emulate. He often makes the best rule book and danger signal.

In dwelling on the relative importance of accidents due to handling objects and falling objects both in frequency and in cost, I have referred only to the cost in compensation—that cost which falls immediately upon the employer and through him upon the consumer of the product involved. This cost, however, is only a part, and a small part, of the total cost of industrial accidents. It is only a part and relatively a small part in many cases of the direct cost of accidents to the employer, for the incidental costs of an accident are much greater. Besides these direct costs, however, there is an economic cost to the injured employee, for compensation does not contemplate the payment of full wages during disability. Nor does a death payment compensate fully for the loss sustained by members of a family through the death of its

wage-earning head. The loss of opportunity to the minor children of a man killed in industry must be taken into consideration, for it is both strikingly noticeable and commendable that we all today try to give to our children educational opportunities beyond those which we ourselves have had.

These factors of cost, both direct and indirect, falling upon the employer and consumer on the one hand, and upon the workman and his family on the other, are sufficient in themselves to justify every rational effort to prevent accidents; but above and beyond these is a higher consideration. We are all naturally desirous of eliminating unnecessary pain and suffering, of minimizing worry, and in considering the reasons for accident prevention; we can take real satisfaction in the thought that it is not only good business, good economics, but above all, it is good morals. (Applause.)

CHAIRMAN HATCH: The next paper is on cranes and hoists by Mr. Turner, of the Shepard Electric Crane and Hoist Company of Montour Falls. Mr. Turner in a very accommodating way says he is quite ready to present his illustrated paper, or he would leave it out, just as we thought best. I am sure, however, that it is a good paper and that you people who are here are entitled to the very best we can give you on this morning's program. Therefore I am going to ask Mr. Turner to give us his paper now. (Applause.)

ILLUSTRATED TALK ON CRANES AND HOISTS

By R. T. Turner, Sales Manager, Shepard Electric Crane and Hoist Company, Montour Falls, N. Y.

MR. CHAIRMAN, LADIES AND GENTLEMEN: I am going to give an illustrated talk and not read a lengthy prepared paper. This is covering the design of electric cranes and hoists to assure safety.

Slide—This is the simplest type of electric hoist, one with the plain push-type trolley. You will notice the simplicity of the design of the motor on one end, the winding drum in the center and the gears and mechanical and electrical brakes on the other end. Everything is in a straight line and there are no parts bolted loosely. Everything is enclosed and protected and gearing and brakes operated in an oil bath.

Slide—This is the same hoist, but it is arranged to hang at right angles to the I-Beam runway.

Slide—This is the construction of the gear end of the hoist. The compactness of the design, all of the gearing being enclosed, is shown. It is all in these solid castings, yet readily accessible by removing the bolts and every part can be pulled out by hand. This is true of our ten, fifteen and twenty-ton cranes. The parts can be removed in the same manner as in our small hoists without using special riggings.

Slide—This shows the main working parts of the hoists. Here is the gearing and the mechanical brake.

Slide—This is one of our latest designs.

Slide—Here is another view, showing the same basic design of the Shepard hoist unit and the hook coming up between the hoist and the controller.

Slide—This shows a two-motor type of hoist. It is a motor-driven trolley attached to a hoisting unit. This handle on the left permits one man to control both motions of the hoist with one hand. He simply pushes up the bar to make the hoist go in the hoisting direction, and pulls it down to make the hoist lower, then turns the handle in one direction to make the motor-driven trolley travel in that direction and turns the bar in the other direction so that the trolley will travel in the opposite direction.

Slide—You will notice this outrig control here. The man has absolute control over that and the tray of cans which he is lowering into the caldron. Simply by pulling the handle down he can lower the basket. By turning the control handle slightly he can run the hoist along to the next caldron.

Slide—This is a type of remote control. You can see the operators in the foreground. They can run that entire assembly line in a large motor factory. It is all done by overhead electric hoists instead of the old conveyor proposition on the floor. It is perfect control from one central point by this means of remote control.

Slide—The furnace door operation all done from a central point from a bench a long distance away from the heat of these furnace doors.

Slide—The controller is operating the furnace doors from here.

Slide—Pouring a ladle in the foundry. A heavy ladle is controlled by one man. You notice the pushbutton is controlled by the right hand attached to the handles of the ladle.

Slide—This is a hot metal crane.

Slide—The operator can raise and lower the entire ladle; he can make it traverse over the heads of the men, and besides that handle it himself when pouring into moulds.

Slide—This is another type.

Slide—Still another type.

Slide—Application of one of these hoists to a grab bucket. Perfect control from the operator's cage of our hoisting unit.

Slide—Type of controllers used.

Slide—Entire resistance can be removed and a new plate and resistance back inserted. This can be taken and run out at the electrician's leisure.

Slide—Same type of box-type controller for big cranes.

Slide—Small back geared motor type. Everything thoroughly enclosed, running in an oil bath.

Slide—This type of hoist is used for the electrifying of a great many old cranes.

Slide—The use of a very simple push-type crane equipped with electric hoists for service in casting storehouses.

Slide—Use of a very simple single I-Beam crane, three motors, cage control.

Slide—Underhung cranes. Can be used to get material across a storehouse or down the length of it, escaping the columns for supporting the roof.

Slide—Larger cranes for handling ladles with very precise control.

Slide—Location of a cage in any convenient point shows in the center for watching the workmen underneath.

Slide—Piling of finished material in the warehouse and by this means doing away with all of this raising by hand.

Slide—Simple cage control hoist with a trailer cage.

Slide—Another of the same type.

Slide—This shows the first crane we knew of in this country. We have it in Montour Falls now. It was used for making cannon on the Hudson River. You will notice that it had a cast bridge and was operated by a screw for the hoisting column. That was turned by hand.

Slide—Contrast the first crane that we know of in this country with our latest design compact crane, all steel construction, steel I-Beams furnishing the girders.

Slide—Everything thoroughly enclosed with the exception of underneath the hoisting unit where the cable comes out.

Slide—Type of trolley that Shepard builds. A very neat design, different from that of any other crane manufactured. All others go through a square in order to deliver the power to the winding drum. Here everything is in one line and all trolley bearings are oiled at one central point.

Slide—Another view of this same new design Shepard trolley.

Slide—This shows how we can carry on large-scale production of the various units which are shown later. You can get about a dozen different types of trolleys by the selection of the correct size of motor, the correct length of drum, correct ratios in the gearing and you can furnish practically the exact equipment to meet the customer's requirements for very special requirements and use nothing but standard equipment, carefully designed and worked out and with every detail attended to in a way you could not do if it was a special trolley for which you were designing.

Slide—Type of Shepard patented track which we use for all of our heavy installations. Instead of running it directly on the flanges of an I-Beam we have two hard T-Rails the same as you would run a railroad locomotive over. Those are clamped to the lower flanges of the I-Beam, not bolted to the I-Beam, but wedges inserted underneath, and these two rails being bolted together through the wedges form the track for our monorail trolleys. That permits us to have much heavier monorail trolleys than the general practice. This gives an ideal tractive surface, using

standard wheels for the purpose. That is all readily renewable. An I-Beam in order to be rolled properly has to be ductile and does not form a uniform bearing surface for trolleys. This hardened steel rail furnishes that.

Slide—This shows the use of these for connecting up, crossing tracks, going where it would be hazardous, or take a great deal of money to look after the safety of crossings. In this way it makes a straight areal line between buildings.

Slide—One of our latest design of monorail hoists. I am going to give quite a little time explaining charging the cupolas by hoists, because it has done so much to do away with accidents which formerly occurred. It has done away also with the hard labor needed in charging cupolas.

Slide—Notice the heavy trolleys, each one permitted to swivel, yet each one having safety collars to prevent any case of accident in the event of the breaking of the king pin.

Slide—Today this bucket system is used for charging cupolas, the charge being put into the bucket.

Slide—This when tripped dumps the material directly into the cupola.

Slide—Or you have a bucket of this type.

Slide—That shows the umbrella type of bucket dump. This is one which is used in a foundry of five-tons-a-day melt. Does away with all elevators, one man being able to do the entire job. Several men used to charge this by hand and all the material had to be brought up to the cupola on a platform and then thrown into the cupola. But now this is done in one operation.

Slide—A typical old foundry cupola floor; five or six men standing around throwing material and taking all morning to bring it up in the trucks.

Slide—The same foundry with a new cupola floor. This is nine feet above the other. In our modern installations we are putting in cupolas having a depth of twenty-five feet. In hand charging it used to be thirteen and seventeen feet. One man is doing the work of six. You have one handling the material into the bucket on the ground, the bucket representing really a cross section of the cupola.

Slide—Lifting up through the hatchway. One man is doing the work of six.

Slide—Shows the bucket in the cupola.

Slide—The bucket after it has been tripped. It is closed by simply letting it on the charging floor and it closes of its own weight.

Slide—This is a large foundry where they put these in simply to get better distribution of the material. One man has control.

Slide—This shows two cupolas served by one hoist.

Slide—Umbrella type of bucket full of coke. You will notice the way it is protected. That hoist is rendered inoperative until the gates around the hatchway are closed.

Slide—This shows the operator above sitting in the cage bringing the charge through the hatchhole.

Slide—A charge dumped into the cupola.

Slide—One method of filling the cupola charging bucket on a scale. They are then run under the charger, picked up and put into the cupola. Contrast this to the old way and you see the saving.

Slide—This shows how you can serve two cupolas by means of a switch.

Slide—Same idea of the bucket filled on the ground, lifted directly on to the charging floor. One man on this floor.

Slide—A very large installation where the buckets are made up in this manner. There is a boy on a tractor taking three buckets at a time and on the depressed track the man throws the material into the bucket. Each bucket holds a complete 4,000-pound charge, two tons of metal, 400 pounds of coke and fifty pounds of limestone going into the bucket. In one installation we are putting three tons of material into the bucket. In this particular case we cut nine men off the charging floor and a half dozen off the yard.

Slide—This shows a large foundry, 250 tons a day, forty tons hourly melt, twenty tons out of each cupola served by one man and it is a comfortable job; replaces nine men who threw in the material.

Slide—Coming up through the hatchway.

Slide—This is the other side of the cupola charger on the transfer crane ready to insert the two-ton charge into the cupola.

Slide—This is a smaller one, only twenty tons daily. One piece of equipment does all of their unloading and charging.

Slide—You will notice how light the cupola house can be because all the material is kept where it belongs on the ground.

Two slides—A larger foundry showing another method of filling the buckets. You have here the storage bins, the cupola charger and the bucket and the bins.

Slide—This shows the yard crane filling the storage bins with pig and scrap taken directly from the cars. Very little to be left in the yard at the left. The charger is shown at the right ready to take the loaded bucket directly to any one of three cupolas.

Slide—This is the inside of the storage bin. They are filling from the top through hatchways directly from the cupolas. Two men will fill all the buckets and traveling scale cars carry them away. They run the stuff in from the top and there is no lifting of the material whatever.

Slide—The type of scale car used. Each beam corresponds to one bin. There is absolute accuracy there with the minimum amount of physical effort.

Slide—These men are coming to the cupola. They are scraping this off into the bucket and then letting the bucket go and deposit the charge in the cupola.

Slide—This shows the hoist bringing in the bucket. These are swinging doors to prevent the cold air from coming into the foundry. They open and shut by means of that device. There are three tracks, each going to three cupolas.

Slide—By means of switches it is possible to select any one of the three cupolas. This gives you a good view of the Shepard track, also of the "T" bar conductor material. We recommend the use of "T" bar current conductor material rather than wire because when it is interrupted, as in the case of this kind of work, it matches up more easily and is readily renewable and very safe.

Slide—Three cupolas in line served by this one charger.

Slide—This supersedes the old method. This is a foundry served by a crane with a great projecting balcony. In former days they carried the material from the yard and placed it here and then the man trucked it and put it in the cupola. That is discarded. We have a transfer crane and spur tracks, so the hoist is run directly to the cupola.

Slide—Same charging machine you saw on the transfer crane running into the cupola.

Slide—A large installation where one piece of equipment unloads and charges 150 tons a day.

Slide—All of the charging work is done in the daytime and the yard work at night.

Slide—Same charging machines you saw in the transfer train.

Slide—We have a turntable in front of the cupola so that the hoist can be turned around at 180 degrees, so that the snout projects out two feet seven inches beyond the crane runway.

Slide—Same piece of equipment being used with a magnet to unload cars of pig iron. This unloads fifty to fifty-five tons in forty minutes.

Slide—We put on one of these electric motor buckets which completely span the car and unload the sand and coke and limestone a car load in about fifty to sixty minutes. That includes placing in the bins.

Slide—Same type of work. This shows the old method.

Slide—This shows the new method, where one man will unload with one piece of equipment 350 tons of pig iron daily; one man operating the two transfer cranes.

Slide—You can also run off on any of those other tracks covering the irregular shaped area.

Mr. Turner then showed motion pictures of several installations of cranes and hoists. (Applause.)

CHAIRMAN HATCH: I think the only thing left is to adjourn until this afternoon's session.

The session adjourned at 1 o'clock P. M.

THURSDAY, DECEMBER 1

AFTERNOON SESSION

General Subject: "Accidents to Women and Children."

The session convened at 2:30 o'clock, President Hamilton presiding.

PRESIDENT HAMILTON: As we had planned in the other meetings of the Congress, it was arranged to have Miss Perkins, the Chairman of the State Industrial Board, preside at this meeting, but she found it necessary yesterday to return to her duties in New York City, so we have had to make a change in that respect in our program, and I am quite sure that you will agree with us, that we have been able to get our friend, Bill Guilbert, to act as Chairman this afternoon.

He is immensely interested in the welfare of women and children, although, as he admits, he has none of his own. But that does not make any difference. You will recall that George Washington, as the Father of his Country, had no children in his immediate family, but we think of him as the Father of our Country, and so we are going to think of Bill Guilbert this afternoon as the father of all the women and children that are engaged in industrial work in our State.

Now, Bill! (Laughter and applause.)

CHAIRMAN GUILBERT: Ladies and Gentlemen:—It is an awful job to put up to a bachelor. (Laughter.) I do not know why I have been chosen for this position this afternoon, although, seriously, I am very much interested in the safety of women and children, not perhaps industrially as in the public schools, because we, through the Safety Bureau of the Chamber of Commerce, are continually in touch with the children in the public and parochial schools of the City of Buffalo. We send safety material to them each month; we give them each month the statistics covering fatalities and accidents to children of school age, and it is my privilege to go into the schools and talk to the children in assembly.

This Congress is somewhat different, because it covers safety to women and children in industrial life. This is the last meeting of the Congress, but I am sure you are of the same opinion that I am that it is by no means the least of the meetings. I really believe that this should have been one of the first subjects to discuss—injuries to women and children. I also believe that this is the first time that this has been covered on any program of any State Safety Congress in the past. So I am very happy to have been asked, or rather ordered, by Commissioner Hamilton to act as Chairman this afternoon.

You know life is made up of disappointments. I sometimes think that without disappointments life would be somewhat dreary.

We live from one day to another and each day brings its disappointments and it makes us look forward so much more to the next day.

We are somewhat disappointed in the program this afternoon. The first speaker was to have been Dr. E. L. Corwin, Executive Secretary, Academy of Medicine, New York City, who was to talk to us on "Continuation Schools as a Factor in Health Conservation." Doctor Corwin is not here. Personally I do not know where he is. I hope wherever he does happen to be he is in good hands. I do not know of any better place he could have been than here. But I am sure he is some place on some good mission.

So we will have to change the program somewhat, due to Doctor Corwin not being here, and we will proceed to the second speaker. It gives me a great deal of pleasure, and I esteem it a privilege, to introduce to you Miss Jeanie V. Minor, Field Secretary, New York Child Labor Committee, who is going to talk to you on the subject of "The Child, His Job and His Health."

Miss Minor! (Applause.)

THE CHILD, HIS JOB AND HIS HEALTH

By Jeanie V. Minor, Field Secretary, New York Child Labor Committee

MR. CHAIRMAN, LADIES AND GENTLEMEN OF THE CONGRESS: At a meeting of employers in Brooklyn two years ago the Chairman stated that the greatest overhead cost to industry in that borough was absenteeism from illness. When to that expense is added the mounting costs of industrial accidents it is evident that all sides, employers, employees and the general public, are directly concerned in the problem of minimizing these factors of joint expense. Today many industrial concerns provide medical service for their employees, but the cost of such service, if adequately maintained, is found to be prohibitive unless those who are served thereby are selected on a basis of physical fitness. As a result the rejection of applicants on this basis alone has been known to run as high as 19 per cent. The rejected applicants help to increase the cost of absenteeism in other lines of employment.

In the articles of incorporation of the New York Child Labor Committee was this objective for the working children of this State: "Physical development sufficient for the demands of citizenship and of industrial efficiency." And today the New York law provides that to every child applying for an employment certificate shall be given a thorough physical examination, following which he shall either receive a certificate of physical fitness declaring him to be in sound health and of normal development for his age, or a certificate of physical unfitness, which bars him from immediate employment. It was anticipated that this would prove an effective bar to the entrance into industry of children too frail or too physically defective to make it safe for them to be employed. In certain cities of the State, including Buffalo, that hope has to a marked extent been realized, and in the year 1926 of 51,458 chil-

dren physically examined for employment certificates in New York City 12,021 were rejected as physically unfit; 413 permanently and 11,608 for the correction of minor physical defects. About 80 per cent of this latter group returned in a short space of time with the defects corrected and upon re-examination were granted certificates of physical fitness. But excellent as this showing is, a study recently made in that same city of 4,009 employed children, 14, 15, and 16 years of age, showed 2,833 of them to have 4,521 physical defects. As few of them had been at work as long as six months it would be unfair to assume that these defects had all been acquired since their employment certificates were issued or that they were necessarily the result of industrial environment. On the contrary, an overwhelming majority of these defects had accompanied the child through his school life and escaped the vigilance of the medical school inspector, the school nurse and subsequently the physician who made the final physical examination for the employment certificate. In justice to the latter it must be said that not all of the minor physical defects found are considered to be of a character which need bar a child from employment—as for instance, one or two defective teeth, a slightly limited vision, or a condition of malnutrition not rated as serious.

But a study of the way in which this protective measure is disregarded in many cities of this State shows a condition sufficiently alarming to merit reference. In one of the largest textile cities of the State, in another city where so-called "dusty" industries employ large groups of children, and in certain other localities, children are being handed certificates of physical fitness by untrained clerks who naturally make no pretense of subjecting the child to any sort of physical examination. Subsequently the Health Officer attaches his signature to the statement that he has personally examined the child, and found him to be in sound health and of normal development for his age. And ignorant of this tragic farce the employer accepts the employment certificate, which to him is a guarantee—or should be—that the child has passed all the requirements for employment, including that of sound health. The inherent danger is that the physical defect, whether serious or slight, may be aggravated by the type of work at which the child is employed. This was found to be true in 49 per cent of employed children studied by the Bureau of Women in Industry of the State Department of Labor. Another danger lies in the possibility that the work which the child was employed to do and which would tend to develop him physically may be of temporary duration and the child transferred by the same employer within the same industry to a process which for the child will spell over-fatigue and perhaps, because of his unfitness for such work, a compensatable accident. The adjustment of the job to the child and to his capacity, both physical and mental, is of real importance, and indifference to this factor plays no small part in the large turnover of employed children.

This latter point is brought out in sharp relief by recent accident reports. A study of "Industrial Accidents to Working Children in Cincinnati" during 1926 analyzes a group of cases where children were hurt at jobs other than those for which they were certified (as for instance, when one certificated as an errand boy caught his finger while operating a cloth-stripping machine; and another employed as a store-room clerk had his finger crushed in a press putting on index tabs) and concludes that the employer who notifies the school authorities that a minor is being employed for a specific job and then puts him to work at some other occupation is just as negligent as if he had hired a child without a working certificate. It is with the intent to protect children from occupations for which they are unfitted or from which they are legally barred that our New York law requires employers to specify for what particular work they are hiring minors. Another Ohio study, entitled "Accidents to Working Children of Ohio," made in 1927 by the Consumers' League of Ohio and allied organizations, with the cooperation of the Industrial Commission of Ohio, shows that 9.8 per cent of the cases analyzed had working certificates for different jobs other than the ones on which they were injured, and less than half had any working certificates at all.

New York's double compensation law, providing that the employer shall pay an equivalent sum to the amount awarded an injured child if the injury occurred during illegal employment, received wide publicity when enacted; both the Labor Department in its *Bulletin* and Associated Industries in its organ, the *Monitor,* directed the attention of the child-employing industries to the new law and urged that every possible precaution be taken against illegal employment. Unquestionably the result has been greatly to reduce illegal child labor, but the fact that during the year ended June 30, 1927, twenty-seven boys and girls under 18 years of age were awarded double compensation because of injuries received at illegal employment shows that more emphasis must be placed on the injusice involved to children in permitting their exposure to the dangers of prohibited processes.

To quote from the Department's review of these cases:

> "Nineteen of these children were operating very dangerous power-driven machines which boys and girls under 16 years of age are specifically prohibited from operating by the Labor Law. Four children were working without a certificate, two were under 14 years of age, one was working between 12 and 6 in the morning and one under 18 years of age was cleaning machinery which was in motion. All of these conditions are illegal. Seven children received permanent injuries, from power presses and three were injurd by power-cutting machines. Of those who were operating power-driven machines contrary to law, seventeen received permanent injuries. These injuries, which cannot be compensated by any sum of money, cost the employers a total of $22,208 and the insurance carriers of these employers an equal sum. The cases which resulted in permanent injury cost industry an average of $2,272 each, one of the highest average rates paid for any group of compensation accidents."

The March *Industrial Bulletin* in an article by the Director of Women in Industry points out that in 1926 there was a sharp

increase in the accidents to minors over the previous year, particularly to the younger group,—i. e., those under 18. Over one-half of all accidents to boys and seventy-eight per cent to girls were in manufacturing, the metal goods industry leading the list in accidents to boys and textile machines in accidents to girls.

Labor and Industry, the official organ of the Department of Labor and Industry of Pennsylvania, contains in its issue of July, 1927, an article on "The Illegally Employed Child Injured in Industry" by the Assistant Director of the Bureau of Women and Children. The study comprised all the minors' accidents reported to the bureau during the last six months of 1926. It was found:

> "(a) That 5 per cent (167) of all accidents to minors under 18 were sustained by illegally employed children, and (b) that the employment of minors at prohibited occupations was a more common violation of the Child Labor Law than employment with illegal hours without employment certificates or at an age below the legal minimum of 14 years."

That the author was not unmindful of the difficulties faced by the honest, well-intentioned but careless employer was indicated in the following paragraphs:

> "In justice to the employer, it may also be said that the responsibility for violations of the law must be shared by the minor in certain instances. For example, some of the minors injured while cleaning or oiling machinery in motion were directly disobeying the rules of the establishment. Again, instances were found where boys had seized the chance to operate elevators even though they were not supposed to do so and were injured thereby.
>
> "All this does not mean that the responsibility of the employer is minimized; on the contrary, it means that renewed vigilance must be practiced and that not only must the employer keep himself informed of the provisions of the law, but also that he must maintain careful supervision of the employment of minors and of their conditions of work if he is to be assured that the Child Labor Law is not being violated in his establishment."

Parenthetically it may be remarked that Pennsylvania prohibits many more occupations to male minors between 16 and 18 years of age, twenty-three in all, than does New York, which bars only three to male minors of those ages.

In order to find some constructive method by which the toll of dangerous accidents in this State to minors under 18 may be lowered, Commissioner Hatch of the Industrial Board has made an analysis of the types of machines on which minors under 18 were injured and compensated. His summary lists not only the types of these machines but shows whether they are covered by the existing law in Section 146. Those machines which he holds are not so covered are: In metal working machines, three kinds; in woodworking machines, one kind; in leather products, one; in paper products, four; in printing and bookbinding, two; in textile, eight; in food products, two; in farm machinery, one; in engineering and contracting machinery, one; in rubber, celluloid, etc., one.

In view of this total of twenty-five types of machinery obviously dangerous to minors but not prohibited by the present law a rule will probably be drafted by the Industrial Board to meet the situation more adequately.

Another suggestion was made to the speaker by a man whose industry employs thousands of operatives. "You're working on the wrong end. Do not penalize us or make it harder for us to employ boys under 18. Make it illegal to install machines which are improperly safeguarded. Once you do that the machine makers will do the rest."

Looked at from any angle the problem of reducing industrial accidents to minors is difficult at best, but certain factors stand out clearly. To insure the child health sufficient for the demands of citizenship and of industrial efficiency, he must have:

1. Periodic physical examinations during his school life, with insistence upon the actual correction of physical defects before his transfer from school to industry. The cooperation of industry in demanding a high standard of enforcement of this provision in the present law will aid materially in its achievements.

2. Strict observance by employers of that provision of the law which restricts the use of an employed minor to the job for which he was hired.

3. Recognition of the fact that the transition of an immature boy or girl from the easy five-hour school day, with its variety of tasks and periods of recess, to the frequently confining eight-hour day of a factory or mercantile establishment brings an unaccustomed strain on a child's physique, resulting especially at first in fatigued nerves and muscles and consequent proneness to accidents. Temper your children as carefully as your tools.

According to a recent statement of the Metropolitan Life Insurance Company the expectation of life of men engaged in industrial pursuits at 20 years old is forty-two years. Of those not so engaged fifty years. That industrial deficit of eight years can be materially reduced by our joint effort to make and keep the boy under 20 physically fit for his industrial future and his industrial environment sufficiently safe to maintain his physical fitness. (Applause.)

Chairman Guilbert: Miss Minor, you have presented a most interesting paper, and I am sure we all feel the tremendous need of accident prevention in this great State, especially with regard to the minor.

The next speaker, I believe, knows more ladies than I do, and that is saying quite a lot. He is in touch with them daily. He represents the New York Telephone Company, and you know as well as I do the number of ladies that the New York Telephone Company employs. He is going to talk to you on "Industrial Accidents, With Particular Relation to the New York Telephone Company."

Mr. John S. Kennedy, Secretary, Employees' Benefit Committee, New York City! (Applause.)

I forgot to say that I wondered where I had seen him before. His face was quite familiar to me when I was introduced to him. I have since found out that he is a former member of the State Prison Commission. (Laughter.)

INDUSTRIAL ACCIDENTS, WITH PARTICULAR RELATION TO THE NEW YORK TELEPHONE COMPANY

By John S. Kennedy, Secretary, Employees' Benefit Committee, New York Telephone Company, New York City

MR. CHAIRMAN, COMMISSIONER HAMILTON, LADIES AND GENTLEMEN: I am here at the cordial invitation of Commissioner Hamilton to the president of our company to tell something of our work, and I wish to express for the officers of our company our complete approval of the thought which was inspired in the accident prevention conference.

I am going to talk to you, or read to you, in a rather disconnected way, some of the work that we are doing along these lines. I suppose I was placed in this section of the program because of the preponderance of women, as the Chairman has expressed, in our employ.

The New York Telephone Company, which is one of the units of the Bell System, has a total of about 54,000 employees, of whom approximately two-thirds are women. Of this number, about 45,000 are located in Greater New York and Westchester County and the balance up-State. Our service reaches into every nook and corner of the State of New York. Of the numbers given there are 26,600 operators—10,000 located in Manhattan, 3,600 in Bronx and Westchester, 8,000 in Long Island, and 5,000 up-State.

I am glad to say that there are no occupational diseases connected with the telephone business. On the subject of accidents I am pleased to report that the number of these distressing occurrences has been reduced greatly year by year. Looking into the future, we aim at the elimination of all avoidable accidents. Every official and supervisory employee of the Telephone Company preaches constantly against the taking of chances by any employee. We have spread the gospel so splendidly enunciated by Commissioner Hamilton in an address about two years ago, as follows:

> "Of all the parties who may have an interest in this matter, it is the employee who has most at stake. He is the victim of the accidents. He must bear the physical and mental suffering which after all constitutes the most serious part of the cost and by no means whatever can this be removed from his shoulders. Even under the most liberal schedule of compensation benefits in the country a great burden of financial loss falls upon the injured employee."

In the designing and development of our plant, from the smallest appliance to the largest construction work, the safety of equipment and prevention of accidents has been uppermost in

the minds of our people. As a single instance of this let me cite the crossarm on the telephone pole, which to the man on the street would not seem important. The size of the crossarm—i. e., the amount of timber in the cross section—was determined on the basis of providing an ample factor of safety with a heavy man supported on the end of the arm. This was even carried further in that the crossarm was designed to carry such weight even under the most severe conditions of wind and ice-loading, and every crossarm put on a telephone pole must meet these requirements. So, in the development of materials and apparatus, not only the electrical and mechanical requirements are specified from the standpoint of transmitting the electrical currents, which are the basis of telephone transmission, but from the standpoint of insuring subscribers, employees and the public against accidents, and all material apparatus are inspected and tested to insure that all meet the requirements. This is true in our buildings, shops and every other branch of the business.

A recent analysis of accidents to employees shows that there were really more accidents happening to employees in our employ while off duty than in the course of their work, largely of course due to the automobile situation of the day. Thus we have a strange situation so far as our people are concerned in that they are safer at work than off duty.

In our executive, commercial and accounting departments accidents are practically negligible, running to the usual things happening to people engaged in office work. Among our operators accidents too are small in numbers. In a report which I just examined for the third quarter of 1927, out of ninety-three accidents to women among the large number given above, sixty-three were due to slipping and falling—and a critical examination of these accidents shows that a large proportion of them are due to falls by young women who feel that the high-heeled shoe is one of the necessities of life. It is questionable whether we shall ever be able to wipe out completely these unfortunate slipping and falling accidents. Our girls are a happy, care-free lot, filled with the joy of living and the desire for roistering and fun-making, and we do not desire to interfere with the joy that is in their lives, but can only constantly caution them about being careful.

The main accidents to our people occur of course in our plant department, which is engaged in construction and other heavy work of the company. In the days gone by these were matters of considerable concern to the officials of our company, but the constant and unrelenting campaign of "Safety First" has brought most desirable results. We have brought together from every branch of our company employees from all over the State who come in actual contact with accidents and the conditions which bring them about, and with their assistance and practical advice we have assembled a safety code which is distributed to all employees and constantly preached at all meetings of employees. The General Safety Code Committee has been made a permanent

organization, and is constantly on the alert to discover conditions and new causes for accidents not heretofore revealed. The safety code is revised and brought up to date as conditions develop.

In 1921 we inaugurated a system of first-aid training, under the direction of our Medical Department, which is carried on, under a supervisor of safety methods and first-aid training, by trained instructors throughout our entire field. During 1926 certificates were issued jointly by our company and the American Red Cross to over 1,000 employees who attended the full course of training and passed the prescribed examination. To date upwards of 10,000 employees have received such certificates. The training given to these employees has proven well worth while, not only in the assistance given to our own employees who have accidents, but to the outside public.

In addition to our complete first-aid training course classes devoted entirely to the Schafer method of artificial respiration are held annually just before the opening of the vacation season. Employees who hold first-aid certificates enroll for the purpose of review and many others completing training also join these classes. Investigations of the reported cases where our employees have saved lives by applying artificial respiration show that in many instances the employees learned the principles of artificial respiration in the supplemental classes.

Our men in this training are scattered all over the State, in the streets, homes and offices, and on the country roads, and we have a most gratifying record of helpfulness in times of accidents to citizens of the State in a considerable number, where the training given our men has saved the lives of injured citizens, who without prompt first aid would have died from their injuries. We find that the ability to care for an injured person after an accident is only one of the benefits resulting, that with first-aid knowledge the employees become more careful and, in consequence, the number of actual accidents is greatly lessened, and even that the day's work is better planned and more efficiently carried out. I might say that, after a careful examination of the scheme of first-aid training in this company, the Police Commissioner of New York issued an order authorizing employees of the New York Telephone Company with first-aid certificates to be allowed within police lines and to assist the police where accidents occur. The American Red Cross gave four awards for exceptional first-aid work during 1926, and of these three went to the Bell System employees for splendid humanitarian service due to their first-aid training. In the award of Theodore N. Vail medals to telephone employees for conspicuous devotion to, or the furtherance of, public service, or in demonstrating extraordinary efficiency in the application of vocational knowledge, many of these awards have been granted to employees because of their knowledge of first-aid and heroic deeds which such knowledge enabled them to perform.

The first-aid plan of the company did not prove applicable to the women of our company and a general health course for women

was inaugurated as the result of a repeated demand for some such type of training. This course was developed by the medical department of the Bell System in conjunction with the American Red Cross, and includes practical work in home hygiene, care of the sick and injured, proper food, etc. Instructions are given under the direction of the Medical Department by registered nurses and trained employee instructors. The general health course has proven to be a very great success and is warmly welcomed by our people. Up to June 20 of this year 249 instructors had been trained, the number of classes was 552, the course was offered to 21,652 women, and the number of student graduates was 6,810.

It is needless for me to say that our company is thoroughly in sympathy with the intensive campaign being constantly carried on by Commissioner Hamilton and his associates on the Industrial Board for every possible preventive measure against accidents, and shall continue to work closely with them in this most important humanitarian work.

May I in closing express the appreciation and thanks of our company for the splendid cooperation and helpfulness of Commissioner Hamilton and his staff in the Bureau of Workmen's Compensation for the prompt and fair consideration of our cases presented to them? It has been our endeavor to live up strictly to the provisions of the Workmen's Compensation Law, to provide prompt payments, medical and surgical attention for any of our employees who have been unfortunate enough to be injured. We shall use every effort to merit a continuance of the friendly and satisfactory relations which we now enjoy.

I am happy to know of the great success which has attended this Congress. I believe that gatherings of this kind for the interchange of opinions and experience are of great value to all employers in the State, and hope most heartily that they will be continued in years to come. (Applause.)

CHAIRMAN GUILBERT: Mr. Kennedy, I believe the New York Telephone Company ought to be congratulated on the work it is doing, especially in the first-aid instruction. I believe that the New York Telephone Company is setting an example to the rest of the industries in New York State. I happen to be familiar with what it is doing here in Buffalo, and I only wish that many more of the industries in Buffalo were doing the same type or the same class of work along those lines that the New York Telephone Company is doing.

The next speaker whom it is my privilege to present to you is going to talk to you on "Accidents to Employed Women."

Mrs. Maud Swartz, Compensation Advisor, Women's Trade Union League, New York City! (Applause.)

ACCIDENTS TO EMPLOYED WOMEN

By Mrs. Maud Swartz, Compensation Advisor, Women's Trade Union League, New York City

MR. CHAIRMAN AND DELEGATES: If Mr. Kennedy knows more ladies than the Chairman, I know more ladies than both of them together.

The Women's Trade Union League of New York City, through me, offers to the women of Greater New York a free service of advice and assistance on compensation cases. This service is six years old. I have personally interviewed in that period of time from 8,000 to 10,000 women, so that I believe I can claim to know more women of all ages and trades than any one in the audience.

These women can come to me and I tell them what their rights are under the law and what they may expect, and what they must do in order to get compensation. I assist them if they need to be returned to industry or rehabilitated or referred to all sorts of departments, and I offer any advice that I feel is necessary for them.

The Bureau of Women in Industry of the Department of Labor made a study in 1926 of the closed cases of injured women in 1925. This report is based on 5,400 accidents to women.

We must bear in mind that women's accidents are largely minor accidents, due to the fact that few women work in the really hazardous trades.

There has been little change in the proportion of accidents to women from 1917–1925. The proportion has not risen above 7 per cent in those years, although the 1920 census gives 25 per cent of those gainfully employed in this State as women. I believe that this is a matter for congratulation, as in all probability women have increased in industry from 1920–1925, although the census figures are not yet available.

In the study above referred to (which may be considered as pretty typical of a good employment year) the largest number of accidents occurred in manufacturing trades, the second largest in clerical and personal service. Eighty per cent of those in personal service happened to janitresses and cleaners. Domestic servants are not covered by the Workmen's Compensation Act.

In causes of accidents to women falls rank first, machinery second. It is of interest to note that machine accidents *decrease* as the age of the workers rises, whereas falls *increase* as the age level rises. Fifty per cent of all falls compensated for were on level ground.

From these figures it would seem wiser to employ more mature women on machines. This, however, employers will not do, as they believe older women cannot acquire the speed of young girls.

It is apparent that with reasonable care a large percentage of the falls on level ground could be avoided.

The percentage of accidents to girls under 18 years was slightly larger than to boys of that age, which forces us to conclude that females in their early industrial career are more liable to accidents than males. As they do not work in more dangerous occupations would we say that girls are giddier than boys? Are they more emotionally unstable in adolescence, or shall we attribute it to high heels? I dare not hazard a guess.

The greatest number of accidents to women occur in the following trades—which, of course, contain large numbers of women:

Clothing—with far too many preventable infections.

Laundry—with some very serious accidents on mangles.

Restaurant workers—these accidents being in large part falls and burns.

Cleaners and janitresses—with large percentage of falls.

I am looking after at present 236 unsettled cases—105 of these were due to falls. This large percentage may be due to the fact that a considerable number of my clients are older women.

Attending the hearings on women's cases almost every day for six years, having interviewed many thousands of women and never having had any difficulty in getting them to tell me their troubles, I have come to the following conclusions: Woman's nervous system is often affected out of all apparent proportion to the severity of the accident. This tends to prolong her disability and she will complain often a year or two after the accident of the shock to her nerves.

As about 80 per cent of all accidents in clerical and personal service occur to janitresses and cleaners (nearly all middle-aged or elderly women), this could be largely avoided by the insurance carriers insisting on proper repairs to stairways, halls, cellars, etc., and proper lighting of same before accepting the risk. The poorer class of tenement houses are notoriously delinquent along these lines.

The insurance companies *must* educate the employers to keep all gangways, floors and halls clear of rubbish. The large majority of our accidents to women in the Metropolitan area occur in the establishments of small employers. The insurance companies have every access to them and can reach them as no other agency can. Once the employer is educated the task is much simpler. The employee who refuses to comply with orders will eventually be eliminated. The employer educated in safety will come to look upon him or her as a menace.

Hundreds of times I have listened to the same story from injured women: "Oh, they always have had boxes lying around!" or, "Yes, the floors are always wet," or, "oily," as the case may be; or, "I told the foreman the machine wasn't working right, but he said, 'Never mind, go ahead, we must get the work out.'"

I believe our constantly increasing speed in industry is a distinct factor in our increasing accident rate. No speaker has mentioned it, but I am of the opinion that to ignore such an important factor does not eliminate it. We must frankly face all the factors.

Is speed more important than safety? Can we secure both? Is the price we pay for this American god—Speed—economically and socially worth it?

In the small plants, where the margin of profit is small, the employer, often ignorant and where business standards do not obtain, the only salvation is "Speed and more speed."

Letter campaigns, carefully planned to show these small employers the risks and accidents incident to their particular business, proper and continuous instructions as to what methods to pursue in case of accidents, would bring results. Large numbers of these employers apparently do not even know they *must* notify the insurance carrier and the Department of Labor of an accident; they do not know the carrier provides medical attention free—from which ignorance endless controversies over doctors' bills arise—a gross injustice to claimant and doctor and a large expense to the Department.

Is the carrier's auditor a walking educational campaign? He should be if he is not.

I believe the insurance carrier, more than any other agency in this State, holds the key to this safety door of the small employer, and for the preservation of the working women of this State from industrial accidents I hereby ask him to make a more serious, carefully planned and persistent effort to open this door. (Applause.)

CHAIRMAN GUILBERT: I am sure we are all agreed on one subject, and that is that Mrs. Swartz certainly speaks with authority on the subject of accidents to women. I want to thank you very kindly, Mrs. Swartz.

We are going to throw this meeting open to a general discussion. This is your last opportunity to speak, and we might say, "Speak now or forever hold your peace." We want to make this an agreeable discussion. I am sure there must be some problem or question on your minds regarding accidents to women and children.

DISCUSSION

H. W. ALLEN (M. Wile & Co., Inc., Buffalo): I would like to ask Mrs. Swartz what would happen to production and industry, and what would happen to the foremen who are responsible for it, if they would advocate to their employees, "Please take your time; slow up?" (Laughter.)

MRS. SWARTZ: I would love to answer the question. I know the answer. The foreman would not be a foreman any longer. (Laughter.) I believe nevertheless that it is the problem we have to face. Now, there is no question about it that the larger employers—we have heard it from the platform here over and over again, and I believe it is true—have answered this question of combined speed with safety.

It is a fact—and I will tell it to you because I know it from my personal experience and from the thousands of girls who have spoken to me—that girls are not permitted to rise from their machines to clear away the rubbish. Every industry has its rubbish—boxes, twine or threads. A bin is provided for that purpose, according to the rule, because remember, every time a girl rises from her machine a second is lost, maybe two seconds, and when you multiply that by twenty girls, what do you have at the end of the year?

Then I say that the fact that you do not face this problem does not remove it. Therefore, I contend that the whole problem in my estimation is the education of the employer. The worker in the last analysis has to do what the boss says or out she goes. And when the employer has been so educated by Associated Industries and other organizations, but mainly by the insurance companies, he will see to it that he will learn how to combine speed with safety.

The fact of the matter is—and I know I am saying a very terrible thing—I believe that employers are not yet paying sufficient compensation. When they pay and pay they will learn a way out. (Applause.) Cities and towns have learned the terrific price of the loss of life, and they are keyed on the saving of lives through campaigns. I do not believe we can gloss over any of these factors.

Now, it can be done. It takes brains. Unfortunately, I have to say here that some of our employers do not have brains. You have to have these elements. You must have the man that will put his mind to the thing, and brains will solve that problem. There is no question about it, and there must be a great desire to do it, because the big employers throughout this country are selfish. It is only a question of when we can reach down to this little employer and ruthlessly eliminate the man who cannot do it, and go to the worker again and place the control of industry in the hands of men who have the brains and the foresight to know how to conduct it without killing and maiming human beings. (Applause.)

G. S. RAVEN (Employers' Liability Association Corp.): It seems that the main theme in this Congress has been that most of the accidents and most of the trouble that is made is caused by the small employer. I have had some experience in going into the smaller plants and into the larger ones, and it seems that if this is the case there ought to be some way of educating the small employer to be a little bit more inclined to, and a little bit more in, favor of safety.

One reason that small employers are not so strong for safety in my estimation is because they do not have to pay for serious injuries like the large employer does. I agree with Mrs. Swartz in what she said in regard to making them keep on paying and paying and finally they will come to the conclusion that it is necessary to be a little bit more cautious and reduce the accidents.

I have been in plants of all sizes—small and large. When I have been in the small ones I have frequently heard men say: "What is the use of us being very particular about safety We pay insurance anyway. Let the insurance company pay for any losses we have." We know that is the case with a very few mills. I have also heard men say: "Well, we have to do six or eight different things; we have to do them because the Labor Department or the Industrial Board has requested us to do so."

I think the Industrial Board deserves considerable credit for making small mills do things that the insurance companies cannot make them do. We often hear this remark: "Sell them the idea of safety." I think that is one of the main things that has little stress put on it—the idea of selling the idea of safety. I have found in cases where I had to explain it to the employers, when they found they had to pay for these things, that they were a great deal more careful and a great deal more particular about guarding the different conditions and safeguarding and improving bad conditions.

I believe they have an excellent system in the Labor Department—an excellent system of inspection, as also has the State Fund. They could explain to these small employers (they are about the only ones who go to the really small employers) that they are paying for these accidents indirectly and that is one reason why they should improve those conditions, as well as to prevent someone from being injured.

As Mrs. Swartz said, if the small fellow does not know what he is doing, he ought not to be doing it.

Most of this discussion this afternoon is in regard to ladies, and I have a little story that I might tell you. Being a man myself, I will have to tell it on the ladies; a lady would tell it on the men. It is a case of misunderstanding. That is what I was referring to in particular, but of course I went around the bush a whole lot. But I believe it is just a case of misunderstanding on the part of the small employer. He thinks he is getting away with it at a little expense and the insurance company pays for it anyway, whereas if he knew the rate was larger in all those small industries, in certain lines, because of the number of accidents that they have, we would get a great deal more cooperation. This case of misunderstanding makes me think of the story of the lady who was driving along the street. A street car bothered her considerably, and she could not pass on the right side, so she thought she would pass on the wrong side. She turned out and went by on the left side. She had just gone past the street car when a policeman stepped up and did not say much, but started to write out a ticket.

She said: "What is that for?"

He replied: "You made a mistake. You didn't go on the right side of the street."

She then said: "You can't arrest me, because this is not my car and I have not any license anyway." (Laughter.)

CHAIRMAN GUILBERT: I believe it is true that the greater number of accidents in proportion to the number of employees occur in the smaller plants. One reason for that, I believe, is that the larger plants have organized safety departments and the smaller plants have not.

In line with your suggestion, Mr. Raven, I would include with the Department of Labor and the State Fund all the insurance companies. I believe that the insurance companies can do a great deal toward the education of the smaller employer. It seems to me that they are the ones who are mostly in touch with the smaller employers. Therefore, I would like to include in your suggestion all the insurance companies.

MR. RAVEN: That is not my idea. I have never known it to fail, where I have talked to the men, right from the start they have said that same thing, that the insurance company could pay it, but if you explain to them that they have to pay directly or indirectly the expense of all accidents, they have come around and were in favor of safety. It is more a question of bringing the idea of selling it to them; in other words, they pay for it and get the benefit from the small insurance.

CHAIRMAN GUILBERT: It has to be sold to them in the very smallest detail, not in a general way. Every small detail has to be covered. I would like to emphasize that with a story, if I may tell one.

A Jewish man was walking down the street and he had quite a little time on his hands. He happened to pass a building in which a spiritualist meeting was being held. He wandered into this building, and somebody started to talk to him. He was asked how he would like to attend one of the spiritualist meetings.

He said: "I don't know anything about them. What are they?"

The other fellow answered: "Come in and talk to those relatives of yours who have departed."

"How can I talk to somebody that is already dead?"

"It is very easy. Haven't you a relative that is dead?"

"Sure, I have a brother what has been dead fifteen years in Russia."

"Wouldn't you like to talk to him?"

"Yes, I would, but how can I talk with my brother what has been dead fifteen years in Russia?"

They took him into the room where they had the seance. After he had paid his admission fee the medium talked to him and asked him the same question—if he had a relative who had departed from this life with whom he would like to talk.

He said: "Yes, I would like to talk to my brother, but he has been dead fifteen years in Russia."

There was silence for a while, and shortly there came a voice from the other end of the room: "Hello, Abie! Hello, Abie!"

"Oh, Ikie, is that you?"

"Sure, it's me."

"Come here and let me see you."

"No, you can talk with me, but you can't see me or touch me. I belong to the spirit world."

The fellow was dumbfounded. He sat and thought and thought. The medium said: "Isn't there some question you would like to ask him?"

Abie said: "I don't understand it. Here is my brother what has been dead fifteen years in Russia and I am talking to him."

The medium asked: "Isn't there some question you would like to ask?"

"Yes, there is. Hello, Ikie!"

The voice came back, "Hello, Abie!"

"Ikie, tell me. Where did you learn to speak English?" (Laughter.)

As I say, there are many of us who forget these little details, which eventually mean so much.

FRED GAA: We have a slogan of "Safety First," and we are living up to it. We have had some splendid speeches on the program which have been very educational. Mrs. Swartz talked about occupational diseases of one kind and another. I am in a position to know that the environment and the various kinds of materials that are used in the shop have a bigger effect on the health and the preservation of health and the safety of the worker than actual accidents have. We know that women are more susceptible to occupational diseases than men.

We also heard about the smaller plants, how they needed to be watched. The bigger ones have their safety devices, have means for accident prevention, but the smaller plants know nothing about them. We have to organize both the workers and the smaller employers. We must have an exchange of ideas. There are people who need to be educated. We must have a big place where things can be shown both in pictures and in words. Why not start a movement for an appropriation by the State to enable the Labor Department to give us that additional education? At the present time what we have is not sufficient. That Department has a lot of material, but it cannot exhibit it on account of lack of space. We ought to also see that our next Congress will be greater and better. (Applause.)

CHAIRMAN GUILBERT: I was glad to hear Mr. Gaa mention environment. Environment has a great deal to do with all of us.

W. P. COX (American Sugar Refining Company, New York City): A great deal has been said about the increase in the number of accidents and the work of the small employer. We sit here day after day and hear the small employer being blamed for the large increase in accidents, and you naturally wonder, with the large increase in the number of accidents and the number of small employers, how we can get any business, because most of the employees must be injured nearly all the time.

We acknowledge from the statistics that there is a gradual increase in the number of accidents, and the question naturally arises that with all our safety work, with all our preaching, with all our meetings, are accidents on the increase in spite of our safety work or are they on the increase because of our safety work?

If they are on the increase because of our safety work it shows that we must be reporting as accidents injuries that we never reported before as accidents. We must acknowledge that in looking over statistics of various States and countries there is not one who furnishes more detail than our own Department of Labor in the State of New York. We have speakers come here from other States, and they give us remarkable figures, showing remarkable reductions in the number of accidents, both in frequency and severity, and they also mention compensation.

I am not criticizing any of the speakers, and I am not criticizing any authors of articles. But about a month ago I was handed a magazine in which there was an article relative to accident reduction, accident prevention. In reading through that article there was one paragraph that struck me forcibly. The author stated that the spirit that was shown in accident prevention work in this particular plant was of such a high calibre that a man came to his foreman and asked to be laid off for fear that his infected hand would affect their no-accident record. Now that sounds wonderful, but the fact that the man had an infected hand surely means that he must have had an accident. So why give us such material as that to ponder over?

Last week I picked up a paper and on the front cover was this caption: "Cutting Accident Costs in Half." It was a very interesting heading, but on examination of the article in particular I found that the accident frequency record had been reduced materially right along. However, an examination of the severity showed that in 1926 it was more than in 1925, and the first six months of 1927 were almost as bad as the total of 1926. Such headlines as that are certainly misleading and certainly give us who are in the safety game a lot of misgiving. Incidentally that while the heading of that same article inferred that costs were being reduced, an actual examination of the charts showed that the premiums paid and the compensation paid were going up.

Now, why "kid" ourselves? If we want to reduce accidents or if we want to reduce our frequency problem, be careful that a department, in order to keep its good record, does not keep men from going over to the medical first-aid station because of that count against their record. If they do not go over to the first-aid station infection is apt to set in, and you are going to have to pay heavily for it in the end.

So I say that such conferences as this, where we have the proper statistics given to us, certainly are wonderfully helpful, but let the statistics be just as reliable as what Commissioner Hamilton and New York State and the Department of Labor put out. Let individual plant statistics be just as reliable; then we

are going to get somewhere. But as I say, when you are out to reduce accidents, be careful that you do not over-step yourselves.

J. J. SHERIDAN (Royal Indemnity Company, New York City): In answer to the speaker's remark, "Are accidents increasing due to our safety work?" I would say, "No." From the experience of the insurance company—I think I can speak for them all—they are doing their part in educating the public in order to be able to avoid the accidents which occur. It is due to the fact that people will not profit by the lessons which are to be learned from the accidents which have occurred. Every accident that occurs should have a careful analysis and the lesson be posted on a bulletin board so that the employees who are working in that particular plant or industry may be able to sum up what has been learned from the investigation of that particular accident.

We have been told by some of our speakers here that the majority of the accidents so far have been caused by falling objects. There may be many things which can be overcome in cutting down the number of accidents through falling. For instance, it might be well for your women and girls (God bless them!) to wear low heels. Very often high heels are the cause of a fall. The lesson is to cut down the high heels so that the hazards will be eliminated.

Many other things can be studied and they can profit by the amount of time and the lesson learned from the investigation. We are also told on the floor here that there are many employers who do not carry insurance. Now if that is the case and where it is known it should be the duty of the party who has that knowledge to notify the State Department of Labor. If the law is violated surely somebody ought to be called to account for it, and then, as stated before, the insurance companies are trying to educate the people by advertising, by personal calls, and also in other ways, to try to cut down the useless toll of life and the number of days lost and the money loss which are also entailed. (Applause.)

CHAIRMAN GUILBERT: I wonder if you know of some way whereby we might get the ladies to reduce the height of their heels? I do not know of any plant that has been successful in reducing the size of the ladies' heels. That is rather a tender spot to the ladies.

MR. SHERIDAN: Mr. Chairman, I just cited that as one example. You know they have been the cause of accidents. If we are to be sincere in cutting down the number of falls that have been caused from the high heels, are we going to profit by it or are we not? If we know that a machine has been properly guarded and the employee has taken the guard off the machine, are we not going to profit by the reason therefor?

I do not know how this will apply to the lady with the high heels, but should not the order be given and insisted upon that

all guards be replaced before the machine is placed in operation? It is the little things that we should consider. They are the causes of the accidents. Remove those little things and we may go on peacefully year after year, knowing that we are making progress in cutting down the number of accidents.

CHAIRMAN GUILBERT: I am perfectly sincere. Do not misunderstand me. If high heels are the cause of the falls I say do away with the high heels. I am merely asking you—how are we going to do it? (Laughter.)

MISS SEVERT (Industrial Secretary, Buffalo Young Women's Christian Association): I have had a bit of experience in discussing the matter of shoes with industrial women, and we have had some effect I think on the kind of shoes worn. We have not done so much in Buffalo as we have done in other cities. I think if we had some of this material that has been given today, we could put it into poster form, or the Department of Labor might do it. These posters could be passed out to industrial women. If we get cooperation we will do what we can to further that education. (Applause.)

DR. P. H. HOURIGAN (Larkin Company, Inc., Buffalo): When a man has lived a half century he begins to discover things. I have been listening to this discourse on the danger of the high heels. My experience is that they are not as dangerous as far as causing falls and injuries to women is concerned as they are supposed to be. Reducing the height of the heels of the women who can wear high heels does not reduce the number of accidents. You will find the minute you attempt to change from that high heel you begin to get foot trouble and you begin to get accidents.

It is part of the function, part of the duty of women to wear pretty shoes, and to look pretty and to think pretty, and to be appealing, and they themselves enjoy that function and that beauty. There is a type of women who can wear them. We have many out in our place. I am not talking from theory or guesswork. We have a couple of thousand women, all of marriageable age, and I think we have very few who have sustained accidents from high heels.

I think it is erroneous, and most people who talk about it have had little or no experience. When they reach the age where they must wear low-heeled shoes they should wear low-heeled shoes. But when they are of the age when they can wear high-heeled shoes, and like to wear high-heeled shoes, we like to look at them. For God's sake, let's be sensible! (Laughter and applause.)

CHAIRMAN GUILBERT: I want to tell you folks that I have been acquainted with Doctor Hourigan for a number of years, and I know that he speaks from experience. (Laughter.)

W. H. ROBERTS (Hooker Electro-Chemical Company, Niagara Falls): I am not going to enter into the discussion, but Mrs.

Swartz's remarks on speed and the good of the industry have been on my mind for quite a while, and I think she surely hit the nail on the head when she brought that up. Our company recognizes that fact, and I am sure we will have it in our battle cry (which I would have liked to have seen across the wall here), "Safety First!" As long as we recognize that as our slogan and aim to make it so our company declares that if speed is interfering with safety the cause of danger must be removed, and we live up to that. Every foreman tries to train that into the men. (Applause.)

CHAIRMAN GUILBERT: You ought to be congratulated, sir. There are a great many plants all through the country that have a motto "Safety First," but I am afraid it means "Safety Second" and production first. I really believe that safety and production are synonymous. You cannot have one without the other.

We have not heard very much from the ladies this afternoon, but we shall be glad to hear from them now.

MISS JEANIE V. MINOR: We heard at least one concrete purpose announced by a woman, the Industrial Secretary of the Young Women's Christian Association. The rest of the discussion reminded me of a summer I spent down on the Jersey coast, where my room was directly above the little porch on which on Sunday afternoons the colored maid entertained her swains. (Laughter.)

One Sunday afternoon I heard this conversation: "Mandy, Ah asks you, would you go with me next Saturday evening to Asbury Park?"

There was no reply.

"Well, honey, you will surely go, won't you?"

Then in a much deeper tone came Mandy's reply: "Well, before I says 'Yes' or before I says 'No' I wants to know, what am your intentions?" (Laughter.)

There was another long period of silence, then William said: "Mandy, all I can say is my intentions is honorable but remote." (Laughter.)

That has seemed to be the predominant idea. Although I believe all of us are interested in achieving the purport of what has been laid before us this afternoon, of the safety of the children and the reduction of accidents to women, I believe that our intentions are honorable, but they will have to be less remote if between now and the next Industrial Safety Congress we are to have statistics furnished by the State Department of Labor showing the proper reduction in accidents. (Applause.)

MRS. MARGARET WALLACE: I feel that some of the employers might be helped if they would do as we do in our plant. We hold our foremen responsible for any accident that happens. We have regular periods of instruction to the foremen, not only a talk on some of the "Safety First" subjects, but we demonstrate to them how they should care for the men working on the machines.

We also caution the foremen that if a workman comes in with a cut finger he must notice that and report it and send the man to the dispensary for treatment. If we find he is weak we give him a little stimulant and the man is sent back to work feeling much better. We encourage these men to report and we ask them to come at all times. (Applause.)

D. G. PHILLIPS (Wabash Railway Company): I have been here a couple of days, and I have not heard a railroad man say anything yet, so in order that we may not be a blank I want to say just a few words on that question of speed versus safety. In the first place there is not so much gained by this supposed speed as you might think there is. Frequently speed in the end causes delay. On the railroad, for instance, we may "kick" six cars down a given track in a minute, without any damage to the cars. The yardmaster, in order to hurry up the operation, orders the foreman to "kick" seven cars down there in a minute. He "kicks" seven cars down in a minute, but knocks the draw-bar out of one of the cars on account of the speed, and it takes a half hour to get that broken-down car out of the road and get started at the railroad again.

I am going to take the liberty of saying just a word or two of the injury record on the road that I represent. In 1917 we hurt 3,000 employees; this year we are going to hurt less than 400.

Now someone will probably say that we hurried them back to work and that has made this big reduction. I want to call your attention to a class of injuries where hurrying back to work is not a factor at all. In 1917 we killed fifty-four employees on duty and we had been killing a far greater number for six years previous to that time. In the last fourteen months we have killed nine. We are not putting out a fifth of the eyes we were in those days. We are not losing one-fifth of the hands or one-fifth of the feet.

Now, I want to say a word about what Mrs. Swartz brought up, about our foremen thinking that speed meant everything. Here is how we have gotten rid of that matter on the Wabash railroad: We had a division that was having a large number of injuries as compared to other divisions. I went to that division. I myself am a labor union man. I went out and talked to the boys and found that our men in that division were overlooking safe practices and doing things that endangered their lives, because they thought if they stopped doing those things it would reduce their efficiency and they would be criticized by the superintendent. I took the superintendent into my confidence and explained the situation to him. He called in every official on that terminal—it was the Detroit terminal. He had every official in there and here is what he told them (and here is the reason we are making a good record on our road today, because all our officials have been sold on the same thing), calling them each by name: "Now, I don't care how good a record you have in handling cars."

To the road supervisor he said: "I don't care how good a track you have," and to the round house foreman, "I don't care how good you fix your wrenches or how many you fix," and to the yardmaster, "I don't care how many cars you switch or how quickly you make up trains; I want each and every one of you to understand one thing: If you don't make a good safety record on top of that I am not going to keep you on this terminal."

There is the secret, and from that day on that terminal has made a splendid record in safety, and that is the secret of the safety movement.

If a head of a factory or any other plant will give his subordinates to understand that no matter how well they do in other lines of work, unless their safety record is good there is no place for them; then we will have reached the millennium of safety. (Applause.)

MRS. SWARTZ: Mr. Chairman, I would like to just answer that gentleman in these terms: Those are my sentiments, absolutely!

CHAIRMAN GUILBERT: I am afraid we will have to draw to a close. The Eleventh Annual Industrial Safety Congress of the Department of Labor to me has been an inspiration. Of course it has been quite a little work. I come now to the job, as I would call it, that I least desire, and that is to introduce your President, Commissioner Hamilton, to officially close this Congress. I am sorry to see it come to a close.

Commissioner Hamilton, I am very glad and indeed sorry to present you to officially close the Eleventh Annual Safety Congress. (Applause.)

EXPRESSIONS OF APPRECIATION

Closing Address by Hon. James A. Hamilton, Industrial Commissioner, New York Department of Labor, President of the Congress

LADIES AND GENTLEMEN: As you notice on the program, we have had quite a number of committees at work to bring about the success we have enjoyed in this Eleventh Industrial Safety Congress. It has been a difficult task to make up the program, and I want to publicly acknowledge the splendid services rendered by Doctor Patton, who is the Director of the Bureau of Statistics and Information of the Department. For a number of years Doctor Hatch, who is now a Member of the Industrial Board, occupied that position and did the laboring. This year, for the first time, Doctor Patton has filled that position and has done splendidly, as you will readily agree from the great program he has prepared.

Then in regard to the exhibits; no Safety Congress would be complete without those exhibits, and you have no idea of the multitudinous detail there has been in connection with the preparation and supervision of the exhibits. Those of you who have

been upstairs on the eighteenth floor realize that it is really a remarkable exhibit we have had. Without the cooperation of our co-worker, Mr. Eipper, more familiarly known as Tom Eipper, that would have been utterly impossible. Tom also served on the Committee on Arrangements and, with the exception of the program, had charge of all the many details in connection with the Congress. That was a pretty big job in itself, but he proved equal to the occasion and everything, as you must have observed, has been well done.

Then we have in our great State Labor Department building in the City of New York a most efficient superintendent, and he is one of those quiet, mechanical sort of chaps, who goes around fixing things and seeing that everything is in order all the time, and in that same quiet, calm and efficient manner Pat Honan has been doing the same thing up here, and I want you to know we appreciate it.

We must not forget Mr. Zimmer, of our Buffalo office. He has had much to do and did it well. He never failed us when called upon to provide something in a hurry, to dig up some information or to see this man or that one in regard to important matters relating to the Congress.

Then you will remember that at the opening session the representative of the Mayor, the Chief of Police, came here and told you that you were welcome and that he was giving you the freedom of the city, and he presented publicly at that time the key of the city. I have kept it with me right along, and strange to relate there has not been a single individual who has applied to me for the use of this key either to get him into trouble or to get him out of trouble. (Laughter.)

Then in this hotel, were it not for the hearty cooperation of the hotel authorities, Mr. Green and Mr. Collison, we never could have had this successful time, because we have everything right under one roof. I believe that has been largely responsible for the splendid attendance we have had, so I want the officials to know. I would like Mr. Statler to know that his representatives here in the management of this hotel have rendered such valuable service to make our creature comforts here so plain and so real to us.

Perhaps you have noticed how nicely you have been escorted to the seats, and with the large numbers that we have had that would have been impossible were it not that we had such an efficient corps of ushers. Who are they? Why, they are factory inspectors in our Department, and you can readily see that as they have done their work so efficiently, as they have greeted the public, it is not at all surprising that they do their work efficiently when they greet those with whom they come in contact on their daily job. As you meet them coming down one aisle and going up the other, it has seemed to me here from the platform as I have looked at them, that some of them must have some real Sunday experience. I can almost see them coming down the center aisle in the

church. At any rate we are quite well satisfied and contented with what they have done.

As you came in here before the speech-making had actually started, you listened to the soft music of the organ as you enjoyed the movie. That soft organ music has come to us from Stanley G. Salisbury. And at times when he could not do it, our versatile friend, Bill Guilbert, tickled the ivories up there. We should know about these individuals who have added to our comfort and pleasure.

Of course the Congress would not be a success if we did not have the happy cooperation between the Captains of Industry and Organized Labor. I wrote personal letters to perhaps a thousand heads of great establishments in our State. Someone said to me last night: "You wrote to the president of our railroad, and I came down from Michigan because he told me to come." I am glad that I did, because you had a chance to listen to him this afternoon.

I believe that where you have the boss at the head of the job interested you are going to get results, and I am glad that so many of these Captains of Industry did either come personally or send their representatives, because I feel the message they will be able to carry back to their responsible superiors will be well worth while.

Then you see here the representatives of Organized Labor. We had the President of the State Federation of Labor right here on this platform, and we have had representatives from a large number of locals, so that both Management and Labor have worked together in order to bring about this wonderful result. (Applause.)

Now about the movies. Do you realize that it is quite a job to arrange a program of movies to fit them into the general scheme of things? And do you realize that in our Department of Labor we have an expert in that line, who is an inspector in our Department? Do you realize that he came up here so quietly and carefully and arranged this thing? You ought to know our inspector, Bob Northrup, has been responsible for that. He is one of the employees of the State. They do these things so quietly that at times we hardly realize it.

Then, of course, we came to Buffalo for a reason. I think I intimated before some time during the proceedings that I came up here a year or two ago and addressed a great class of those who were interested in the subject of safety, and I was amazed to find that they had over 1,200 foremen who were interested in this great subject. I said, "That is a fertile field," and we came up here and were delighted that we came. While the Chamber of Commerce officially invited us and did everything possible to make it comfortable for us, the guiding and directing genius of their activities here was none other than our friend Bill, and Bill Guilbert was the last one that I wanted to mention. From the bottom of my heart, and from the bottom of your heart, we are very grateful for that happy spirit of cooperation. (Applause.)

It hardly seems possible that the years go by so quickly when I meet you folks year after year here. I feel, well now, that you chaps do not change in appearance. I wonder if *I* do. But we are going to face another twelve months, and from the inspirational talks that we have had here, if we can go back and spread that knowledge and information to others, oh, what a valuable thing it will be! because in the world's activities it is not so much absorbing information and education for yourselves, as all that knowledge and information if it is simply kept locked up within ourselves will benefit but one. But if we can put that information across to others, if we can put that little thought across, it will be helpful, so we can save a finger or an arm or a leg or an eye. Oh, if we can save one life during the coming year, then we will certainly have given a lesson in applied safety!

I wish you in the next twelve months all happiness and contentment, and I sincerely hope that we may all be spared again to come and give the results of our labors when we meet again next year. (Applause.)

The final session of the Industrial Safety Congress adjourned at 4:20 o'clock.

THOSE WHO REGISTERED AT THE CONGRESS

Name	Affiliation	Locality
R. E. Abbott	Fisher Body Corp	Detroit, Mich.
J. Roy Abell	Willson Goggles, Inc	Reading, Pa.
Edward Abplanalp	South Buffalo R. R	Orchard Pk.
Victor J. Accossini	Union Carbide Co	Niagara Falls
John Acs	Wickwire Spencer Steel Co.	Buffalo
Albert Adams	Niagara, Lockport& Ontario Power Co	Jamestown
D. B. Ahgreen	King Manufacturing Corp.	Buffalo
Arthur F. Ahr	Buffalo School Dept	Buffalo
F. R. Ainsworth	*Gazette* Publishing Co	Niagara Falls
L. R. Albert	Atmospheric Nitrogen Corp.	Syracuse
Leslie C. Albrecht		Buffalo
O. F. Alderson	Aluminum Co	Niagara Falls
H. J. Aldisch	Spencer Kellogg & Sons, Inc.	Buffalo
Everett E. Aldridge	American Radiator Co	Buffalo
Mervin J. Aldridge	Arner Drug Co	Buffalo
Herbert W. Allen	M. Wile & Co., Inc	Buffalo
James B. Allen	Plasterers' Union No. 30	Brooklyn
Lewis R. Allen	Washburn Crosby Co	Buffalo
Philip Allen	Fink, Dumont & White, Inc.	New York
H. E. Almberg	Consolidated Gas. Co. of N. Y	New York
C. H. Almstead	Patent Scaffolding Co	New York
Phillip Ammon	Plasterers' Union No. 30	Brooklyn
A. Amram	Hamlin & Co	New York
Carl L. Anderson	Buffalo Bronze Die Cast. Corp	Buffalo
E. F. Anderson	Pillsbury Flour Mills Co	Buffalo
Hjalmar Anderson	Niagara Falls Power Co	Niagara Falls
John F. Anderson	Hartford Acc. & Ind. Co	Hartford, Conn.
N. P. Anderson	Union Carbide Co	Niagara Falls
William A. Anderson	Hercules Powder Co	Buffalo
Lawrence Andolselk	Moench Tanning Co	Gowanda
H. R. Andrews	Atlas Cement Co	Hudson
H. W. Andrus	Erie R. R. Co	New York
H. E. Apple, Jr	Snider Packing Corp	Rochester
L. W. Argesinger, Jr	Erie R. R. Co	Kenmore
John L. Armbruster	Barman Bros	Buffalo
J. P. Arms	The Columbia Mills, Inc	Minetto
Mrs. A. L. Armstrong		Rochester
Albert L. Armstrong	Eastman Kodak Co	Rochester
Wm. E. Armstrong	The Pullman Co	Buffalo
L. Arnold	U. S. Aluminum Co	La Salle
Simon Arns	J. W. Pohlman Foundry Co.	Buffalo
Charles B. Ash	Department of Labor	New York
W. Ashton	Hooker Electro-Chemical Co	Niagara Falls
C. C. Atwood	Brooklyn Union Gas Co	Brooklyn
George Audrey	U. S. L. Batt. Corp	Niagara Falls
L. F. Auman	Niagara Alkali Co	Niagara Falls
L. Avery	Can. Carbo Co	Niagara Falls
Michael W. Babyk	Kimberly-Clark Co	Niagara Falls
A. B. Bacon	R. E. Chapin Mfg. Works	Batavia
George C. Baer	Canadian Niagara Power Co.	Niagara Falls
Harold N. Baker	Kimberly-Clark Co	Niagara Falls
Walter C. Baker	Kimberly-Clark Co	Niagara Falls
Frank Baldassero	Niagara Alkali Co	Niagara Falls

NAME	AFFILIATION	LOCALITY
A. H. Baldwin	Can. Niagara Power Co.	Niagara Falls
Chas. E. Baldwin	Bureau of Labor Statistics	Washington, D.C.
H. W. Baldwin	American Car & Fdry Co.	Buffalo
C. Ball	Pyrene Mfg. Co.	Buffalo
J. F. Ball	U. S. Steel Prod. Co.	New York
J. Gordon Ball	The Carborundum Co.	Niagara Falls
Hon. Jas. H. H. Ballantyne	Ontario Dept. of Labor.	Toronto,Ont.,Can.
Edward L. Ballsmith	American Brass Co.	Buffalo
C. P. Balsiger	South Penn. Oil Co.	Oil City, Pa.
W. F. Baltis		Tonawanda
Raymond A. Baltzly	Markel Elec. Prod. Co.	Buffalo
S. G. Bamrach	Kimberly-Clark Co.	Niagara Falls
J. Oliver Banks	Niagara Falls Power Co.	Niagara Falls
John H. Barfoot	Domor Chair Co.	Buffalo
A. C. Barbour	Barbour Fire Equip. Agcy.	Indianapolis, Ind.
F. M. Barker	Lehigh Valley R. R. Co.	Buffalo
George W. Barker	International Railway Co.	Buffalo
J. H. Barnholt	E. I. duPont de Nemours & Co.	Wilmington, Del.
Wilfred Barratt	J. H. Williams & Co.	Buffalo
L. A. Barrett	Dept. of Labor.	Buffalo
Mrs. R. J. Barringer	Travelers Ins. Co.	Buffalo
R. J. Barringer	Travelers Ins. Co.	Buffalo
A. E. Barron	Surty Mfg. Co.	New Rochelle
Owen J. Barry	National Carbon Co.	Niagara Falls
Dr. Michael H. Barsky	Wolff Industrial Service, Inc.	New York
John A. Barth	U. S. Aluminum Co.	Niagara Falls
W. Bartlebaugh	Niagara Alkali Co.	Niagara Falls
A. C. Barton	U. S. Fid. & Guar. Co.	Syracuse
O. Baskin	International Railway Co.	Buffalo
E. C. Bassett	International Railway Co.	Buffalo
Frederick E. Bastian	Bastian Bros. Co.	Rochester
Fred. J. Batson	Kittinger Co.	Buffalo
Harold G. Bauer	Buffalo Forge Co.	Buffalo
Wm. F. Bauers	Ironworkers' Union No. 6	Buffalo
M. E. Bauman	U. S. Aluminum Co.	Niagara Falls
Leo P. Baur	Bradley Wash Fountain Co.	Buffalo
Verono Bayliss	Dept. of Labor.	Niagara Falls
L. W. Beale	Firth Carpet Co.	Firthcliffe
W. Beament	Norton Co.	Chippewa, Ont., Can.
Arnold R. Beardsley	Larkin Co.	Buffalo
F. J. Beatty	Geneva Federation of Labor	Geneva
R. H. Beaumont	Geo. S. McKearin, Inc.	Hoosick Falls
Crawford S. Beck	Carborundum Co.	Niagara Falls
Henry Beck	Spencer Kellogg Sons	Buffalo
Marshal Beck	Great Lakes Portland Cement Corp.	Buffalo
John G. Becker	Buffalo Forge Co.	Buffalo
George L. Beckrich	Dept. of Labor.	No. Tonawanda
E. I. Bell	Federal Mfg. Corp.	Buffalo
Helen G. Bell	Utica Mutual Ins. Co.	Buffalo
Wm. N. Bell	Carborundum Co.	Niagara Falls
G. Ernest Bemus	Markel Elec. Prod., Inc.	Buffalo
Edward H. Ben	General Chemical Co.	Buffalo
James R. Benbow	Acheson Graphite Co.	Niagara Falls
Earl Bench	Columbian Rope Co.	Auburn
A. W. Bender	Buffalo Scale Co.	Buffalo
F. J. Bender	Canadian Niagara Power Co.	Chippewa, Ont., Can.
Charles C. Benedict	Standard Oil Co. of N. Y.	New York

NAME	AFFILIATION	LOCALITY
J. R. Bennett	Edw. L. Koenig & Co	Buffalo
Mrs. W. R. Bennett		San Juan, P. R.
W. R. Bennett		San Juan, P. R.
Joseph Bent	Washburn Crosby Co	Buffalo
E. L. Benton	State Insurance Fund	Buffalo
Henry Berg	Kimberly-Clark Co	Niagara Falls
William F. Berg	Plumbers' Union, No. 418, Queens	Astoria, L. I.
W. E. Berger	Lehigh Valley R. R. Co	Buffalo
G. W. Bergstrom	Donner Steel Co	Buffalo
Frank Bernadt	U. S. Rubber Reclaiming Co.	Buffalo
Walter H. Bernadt	Donner-Hanna Coke Corp.	Buffalo
Joe Bevan	Kimberly-Clark Co	Niagara Falls
Jack Bielly		Buffalo
Terry K. Biglow	Dunlop Tire & Rubber Co.	Buffalo
Alfred C. Bingham	Niagara Falls Power Co	La Salle
S. Biondolillo	Y. M. C. A. Inst. of Tech.	Buffalo
Harry V. Bird	Niagara Falls Power Co	Niagara Falls
M. J. Birney	Shepard Elec. Crane & Hoist Co	Montour Falls
O. O. Bishop	Kerr Remington Salt Co	Geneseo
R. H. Bissell	Koppers Constr. Co. of Pittsburg	Lackawanna
Homer Blackwell	South Buffalo Railway	Lackawanna
Paul Blandenspiel	National Aniline Chem. Co.	Buffalo
Frank Blake	*Courier-Express*	Buffalo
R. P. Blake	Independence Bureau	Philadelphia, Pa.
True W. Blake	Union Carbide Co	Niagara Falls
Stanley Blanch	Kimberly-Clark Co	Niagara Falls
William H. Blanchard	Fifth Avenue Coach Co	New York
Maj. Chas. K. Blatchly	Dept. of Labor	Buffalo
Leo Blazak	International Railway Co.	Buffalo
Henry Block	Acme Steel Mall. Iron Co.	Buffalo
C. G. Bloss	Commercial Casualty Co.	Syracuse
Chas. M. Blum	Carpenters' and Joiners' Union No. 488	New York
G. Blumenstein	Frontier Meter Works	Buffalo
Geo. Blumenstein	Lockhart-Hodge Co	Buffalo
Frank Bocajer	Norton Co	Niagara Falls, Ont., Can.
Chas. J. Boehler	U. S. Aluminum Co	Buffalo
H. F. Boehm	Hubbs & Howe Co	Kenmore
J. M. Bohan	Pillsbury Flour Mills Co.	Buffalo
John Bolick	U. S. Aluminum Co	Niagara Falls
Margaret Bolles	U. S. Rubber Reclaiming Co.	Buffalo
Frank J. Bollman	D. McDonald Co	Albany
Walter F. Bond	American Radiator Co	Buffalo
Jan Borecki	Washburn Crosby Co	Buffalo
Edward Borgeson	Atlas Steel Corp	Dunkirk
Julian Boriecki	Fillmore Ave. Foundry & Iron Works	Buffalo
Joseph Bott	Bastian Bros. Co	Rochester
H. F. Bottorf	Pangburn Corp	Buffalo
J. J. Bourke	Utica Gas & Elec. Co	Utica
E. A. Bowen	Shredded Wheat Co	Niagara Falls
H. E. Bowers	Travelers Ins. Co	Buffalo
Robert S. Bowers		Buffalo
B. F. Bowman	Dayton Safety Ladder Co.	Dayton, Ohio
C. H. Bowman	Acheson Graphite Co	Niagara Falls
James J. Boyan	Westchester Lighting Co	New Rochelle
W. Wallace Boyd	Bethlehem Steel Co	No. Tonawanda
Mr. and Mrs. C. Boyer, Jr.	Lehigh Valley R. R.	Buffalo

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Peter N. Boylan	B., R. & P. Railway Co	Rochester
Wm. R. Boyle	Hartford Acc. & Ind. Co	Buffalo
James Brady	Dept. of Labor	New York
James F. Brady	Shredded Wheat Co	Niagara Falls
C. G. Branch	Dept. of Labor	New York
George Braun	Buffalo Forge Co	Buffalo
John Braunbach	Spencer Kellogg & Sons, Inc.	Buffalo
Wm. Brayman	American Brass Co	Buffalo
O. H. Brede	Fidelity & Casualty Co. of N. Y	Rochester
John W. Brennan	Carpenters' Union No. 298	L. I. City
Thos. P. Brennan	L. I. Railroad Co	New York
W. T. Brennagh	Dept. of Labor	Hamilton, Can.
T. E. Bresnan	Standard Oil Co. of N. Y	New York
Wm. Brett	Shea Operating Corp	Buffalo
Peter Brick	Washburn Crosby Co	Buffalo
Oswald M. Bridge	Atlas Gypsum Corp	Clarence
Wm. Bridgman	Markel Elec. Prod. Co	Buffalo
Thomas Brierley	Hooker Electro-Chemical Co	Niagara Falls
W. T. Briggs	The Carborundum Co	Niagara Falls
C. R. Brigham	The Pullman Co	Buffalo
William V. Brooks	Dunlop Tire Rubber Co	Buffalo
A. D. Brown	New York State Railways	Syracuse
A. T. Brown	Wickwire Spencer Steel Co	Buffalo
C. Eduard Brown	Hartford Acc. & Ind. Co	Buffalo
Frank F. Brown	Spencer Kellogg & Sons, Inc.	Buffalo
F. J. Brown	The Carborundum Co	Niagara Falls
Howard J. Brown	Iroquois Gas Corp	Buffalo
Leon R. Brown	New York State Railways	Rochester
Lilian G. Brown	Ontario Dept. of Labor	Toronto, Ont., Can.
M. D. Brown	Canadian Niagara Power Co	Fort Erie, Ont., Can.
Randall F. Brown	The Carborundum Co	Niagara Falls
Robert B. Brown	American Mfg. Co	Brooklyn
T. J. Brown	Republic Metalware Co	Buffalo
Floyd W. Brownell	DuPont Rayon Co	Buffalo
W. L. Bruce	Westchester Lighting Co	Mt. Vernon
Julius Bruder	D. McDonald & Co	Albany
E. F. Brueck, Jr	Ætna Casualty Co	Hasbrouck Hts., N. J.
W. Brunsekl	Carborundum Co	Niagara Falls
Walter James Bryan	Fillmore Ave. Fdry. & Iron Wks	Buffalo
J. W. Bucher	Carborundum Co	Niagara Falls
Wm. L. Buchs	Fedders Mfg. Co	Buffalo
F. A. Bucklin	Geneva Preserving Co	Geneva
Herman C. Budde	Niagara Falls Power Co	Niagara Falls
Joseph G. Buehlmann	Gould Coupler Co	Lancaster
Anne W. Buffum	Hooker Electric-Chemical Co	Niagara Falls
Joseph Bugl	Lehigh Valley R. R. Co	Buffalo
Joseph F. Buhrle	Buffalo Bronze & Die Cast. Corp	Buffalo
Harold Bunge	The Fleischmann Co	Peekskill
C. W. Bunnell	Rome Wire Co	Buffalo
John Burcyak	Kensington Davis Co	Buffalo
Frieda U. Burke	Otis Elevator Co	Buffalo
James T. Burke	Dept. of Labor	Toronto, Ont., Can.

NAME	AFFILIATION	LOCALITY
F. W. Burkhardt	Pennsylvania R. R. Co.	Buffalo
S. A. Burlingham	Hartford Acc. & Ind. Co.	Syracuse
Edward Burman	Wolff Industrial Service, Inc.	New York
George J. Burns	Rome Wire Co.	Buffalo
Thomas Burns	Kimberly-Clark Co.	Niagara Falls
Wm. H. Burns	Niagara Alkali Co.	La Salle
George H. Burroughs	Travelers Ins. Co.	Buffalo
Frank J. Burst	Buffalo Beach Beam Co.	Lackawanna
Frank A. Bussman	Trunk Line Freight Insp. Bureau	Buffalo
J. L. Butcher	International Cooperage Co	Niagara Falls
Reynard Butcher	Utica Willamole Bleaching Co.	Chadwicks
G. T. Butterworth	U. S. Fid. & Guar. Co.	Syracuse
Wm. A. Buyers	International Railway Co.	Buffalo
Thos. Cadwallader	Carborundum Co.	La Salle
P. Callaghan	General Ice Cream Co.	Buffalo
W. B. Callahan	American Radiator Co.	Buffalo
John J. Callan	Atlas Steel Corp.	Dunkirk
Frank Camann	Carborundum Co.	La Salle
James Cameron	Roessler & Hasslacher Chem. Co.	Niagara Falls
H. A. Campaigne	Niagara Falls Power Co.	Niagara Falls
Geo. Campbell	Bethlehem Steel Co.	Buffalo
John M. Campbell	Carpenters' Union No. 2305	Brooklyn
M. L. Campbell	International Railway Co.	Niagara Falls
David I. Cantor	State Insurance Fund	Buffalo
Serafino Cantro	Kimberly-Clark Co.	Niagara Falls
Geo. H. Card	Manufacturers' Assn. of Poughkeepsie	Poughkeepsie
William Carl	Rome Wire Co.	Buffalo
E. D. Carland	Trunk Line Freight Insp. Bureau	Buffalo
Chas. Carlsen	Niagara Falls Power Co.	Niagara Falls
Wm. H. Carman	Carborundum Co.	Niagara Falls
A. Carnevale	Y. M. C. A. Inst. of Tech.	Buffalo
J. D. Carpenter	U. S. L. Bat. Corp.	Buffalo
O. J. Carpenter	General Abrasive Co.	Niagara Falls
John H. Carr	Carpenters' Union No. 353.	Far Rockaway
L. H. Carragan	General Carbonic Co.	Buffalo
Francis X. Carroll	Globe Indemnity Co.	Buffalo
Arthur C. Carruthers	*Safety Engineering*	New York
Earle D. Carson	Eastman Kodak Co.	Rochester
C. S. Carstens	Metropolitan Life Ins. Co.	New York
J. W. Carter	Standard Oil Co. of N. Y.	New York
L. C. Carters	Central Iron & Steel Co.	Harrisburg, Pa.
James D. Cartins	New York Air Brake Co.	Watertown
John A. Casey	International Railway Co.	Buffalo
Robert L. Cass	International Railway Co.	Buffalo.
Fred L. Caughill	International Railway Co.	Buffalo
James J. Cavanaugh	Bethlehem Steel Co.	Lackawanna
Gregory P. Cavanaugh	Donner Steel Co.	Buffalo
August Cesasi	Niagara Junction Ry. Co.	Niagara Falls
L. E. Chamberlain	Phoenix Gypsum Co., Inc.	Basom
P. H. S. Chapman	Aluminum Co. of America.	Niagara Falls
W. H. Chapman	R. E. Dietz Co.	Onondaga
C. B. Chase	Karle Saw Co.	Buffalo
R. Duncan Cheel	Liberty Mut. Ins. Co.	Syracuse
Edward W. Cheney	Pierce Arrow Motor Car Co	Buffalo
Cecil Chester	Buffalo Bolt Co.	No. Tonawanda
W. H. Chilton		Buffalo
W. H. Chiveston	Art Metal Constr. Co.	Jamestown

NAME	AFFILIATION	LOCALITY
O. H. Christie	Buffalo Fire App. Co	Buffalo
T. E. Christie	W. H. Miner, Inc	Chicago, Ill.
M. H. Christopherson	State Insurance Fund	New York
William L. Ciarletta	Carpenters' Union No. 385	New York
A. Clark	Safety Clothing Co	Cleveland, Ohio
Azzel Clark	Snider Packing Corp	Oneida
E. C. Clark	Jell-O Co	Le Roy
F. F. Clark	U. S. Fid. & Guar. Co	Syracuse
H. M. Clark	Hartford Acc. & Ind. Co	Buffalo
Sydney E. Clarke	Eastman Kodak Co	Rochester
E. Clauss	Enser & Clauss	Buffalo
Jeffery Cloutier	Kimberly-Clark Co	Niagara Falls
Frank Clement	International Ry. Co	Buffalo
M. O. Clement	Massey Harris Harvester Co.	Batavia
George Clementson	Great Lakes Portland Cement Co	Buffalo
Leslie R. S. Climie	General Elec. Co. of Schenectady	Buffalo
E. J. Clink	Federal Tele. Mfg. Corp	Buffalo
James H. Clint	Union Carbide Co	Niagara Falls
John F. Cluney	P. A. Motor Co	Buffalo
James C. Cochrane	American Railway Exp. Co.	New York
Wm. B. Cochrane, M.D.		Rochester
Mrs. W. B. Cochrane		Rochester
Christopher Colosanti	Rome Wire Co	Buffalo
Edward R. Cole	Acheson Graphite Co	Niagara Falls
E. S. Coleman	Lackawanna Steel Const. Corp	Lackawanna
George A. Coleman	American Railway Exp. Co.	Buffalo
Robert F. Coleman	Robert F. Coleman, Inc	New York
Solon M. Coleman	Shredded Wheat Co	Niagara Falls
M. J. Colleran	O. P. C. F. I. A	New York
R. H. Collignon	Niagara Gorge R. R. Co	Niagara Falls
Hugh Collins	Aluminum Co. of Amer	Niagara Falls
Sol. Collins	Carborundum Co	Niagara Falls
Guy E. Colton	I. B. C. of International Ry. Co	Buffalo
James A. Coltrin	National Radiator Corp	Dunkirk
Stephen Comeau	Amer. Mut. Liab. Ins. Co	Buffalo
Thomas R. Compton	American Brass Co	Buffalo
H. J. Connelly	International Cooperage Co.	Niagara Falls
Thomas J. Connolly	Hewitt Rubber Co	Buffalo
Glenn W. Cook	Travelers Ins. Co	Hartford, Conn.
Lee S. Cooke	Central Cont. School	Buffalo
W. Cookhill	Wright & Kremer	Niagara Falls
Geo. H. Cooley	Chamber of Commerce	Niagara Falls
Theodore N. Copeland	International Bus Corp	Buffalo
C. E. Corby	Dept. of Labor	Buffalo
James A. Corcoran	Dept. of Labor	New York
Harryette Core	State Insurance Fund	Buffalo
R. F. Corey	Amer. Sales Book Co	Niagara Falls
Elmer C. Cornell	Shredded Wheat Co	Niagara Falls
B. C. Coss	Dept. of Labor	Buffalo
John Costello	Shredded Wheat Co	Niagara Falls
William P. Coster	Amer. Sugar Ref. Co	New York
L. H. Coughlin	Niagara Falls Power Co	Niagara Falls
Scott Coultr	Rochester Cut Stone Co	Cazenovia
Clarence Counts	ARCO	Buffalo
W. P. Cox	Amer. Sugar Ref. Co	New York
J. M. Cranz	Hewitt Gutta Percha Rubber Corp	Buffalo
F. L. Crawford	Roesch Corp	Buffalo

NAME	AFFILIATION	LOCALITY
W. R. Creadick	DuPont Rayon Co	Buffalo
A. G. Creddeman	Amer. Ry. Exp. Co	Buffalo
Madge H. Croal	Bastian Bros. Co	Rochester
A. Cromwell	Niagara Alkali Co	Niagara Falls
Oliver F. W. Cromwell	U. S. Leather Co	Ridgway, Pa.
A. E. Crone	Acme Steel & Mal. Co	Buffalo
Allen U. Crone	Buffalo Brake Beam Co	Lackawanna
Lester A. Crone	Acme Steel Co	Buffalo
Wm. J. Cronin	Natl. Metals Trade Assn	New York
Joseph Crosby	U. S. L. Batt. Corp	Niagara Falls
C. P. Cullen	Gould Coupler Co	Depew
E. J. Cullen	Lehigh Valley R. R. Co	Buffalo
Lauretta M. Cullen	Utica Mut. Ins. Co	Buffalo
Hon. Richard J. Cullen	New York State Industrial Board	New York
J. D. Cunningham	Columbia Casualty Co	Syracuse
Edw. P. Cummiskey	Otis Elevator Co	Buffalo
Wm. A. Cunningham	General Chem. Co	Buffalo
R. H. Curmee	Int. Molders' Union	Rochester
Robert A. Currie	R. E. Dietz Co	Syracuse
Michael Curtain	Carpenters and Joiners of America	New York
L. G. Curtis	Donner Steel Co	Buffalo
Thomas J. Curtis	Greater N. Y. Building & Allied Trades Comp. Bur.	New York
Allyn L. Daboll	Buffalo Sldg. Co	Buffalo
A. E. Dahlberg	Geo. E. Halsey, Inc	Chicago, Ill.
Frank H. Dalgenbach	Buffalo Forge Co	Buffalo
H. J. Daly	Norton Co	Niagara Falls
J. J. Daly	Dept. of Labor	Albany
M. A. Daly	Associated Industries of N. Y. State	Buffalo
W. A. Daly	Otis Elevator Co	Yonkers
Mrs. W. A. Daly	Otis Elevator Co	Yonkers
Chas. V. Damon	Roesch Corp	Buffalo
F. L. Damon	Louisville Cement Co	Buffalo
Cecelia Dane	American Brass Co	Buffalo
Geo. C. Daniels	Dept. of Labor	Albany
Elmer Danon	Semet Solvay Co	Syracuse
R. W. Darley	Republic Metalware Co	Buffalo
M. W. Daugherty	Aluminum Co. of Amer	Niagara Falls
A. E. Davidson	Patent Scaffolding Co	New York
C. G. Davis	Venadium Corp. of Amer	Niagara Falls
F. W. Davis	Rome Wire Co	Buffalo
W. B. Davis	Buffalo, Rochester & Pittsburg Ry	Rochester
W. R. Davis	Donner Steel Co	Buffalo
Edwin G. Day	Amer. Abrasive Metals Co	Buffalo
L. A. Day	Buffalo Forge Co	Buffalo
C. E. De Camp	Norwich Pharmacal Co	Norwich
F. T. G. De Leeuw	Vovadel Process Corp	Buffalo
Wm. De Mouth	Lehigh & Hudson R. R. Co	Warwick
V. De Wysocki	Shredded Wheat Co	Niagara Falls
Harold F. Dean	M. Wile Co	Buffalo
Peter C. Deck	Barcalo Mfg. Co	Buffalo
Charles G. Decker	Elm Vocational School	Kenmore
J. Decker	Arco Vacuum Co	Fort Erie
E. D. Dee	Western Elec. Co	New York
Chas. Deering	Niagara Gorge R. R	Lewiston
C. T. Delmage	Union Carbide Co	Niagara Falls
J. S. Dement	Columbia Mills, Inc	Minetto
A. L. Demming, Jr	Oldbury Electro-Chem. Co	Niagara Falls

NAME	AFFILIATION	LOCALITY
G. A. Dennis	*Gazette* Publ. Co	Niagara Falls
F. W. Dennis	Hooker Electro-Chemical Co.	Niagara Falls
T. E. Depew	*Southern Furniture Journal*	New York
W. E. Detenbech	Fedders Mfg. Co	Buffalo
Marian A. Deuel	Bethlehem Steel Co	Buffalo
M. J. Devlin	South Buffalo Ry. Co	Buffalo
David Diamond		Buffalo
James R. Dick	Standard Foundry Co	Buffalo
G. W. Dickinson	Shredded Wheat Co	Niagara Falls
Bradley Diefenbach	International Ry. Co	Buffalo
Geo. Diefenbach		Tonawanda
W. C. Diefenbach	International Ry. Co	Buffalo
F. A. Diehl	Singer Mfg. Co	Westfield, N. J.
W. Diffiné	Carborundum Co	Niagara Falls
S. W. Dill	New York Central R. R. Co.	New York
Geo. E. Dillon	Pierce Arrow Motor Co	Buffalo
H. J. Dillon	King Mfg. Corp	Kenmore
Jas. W. Dillon	Third Ave. Ry. System	New York
Arthur A. Dils	Travelers Ins. Co	Buffalo
Chas. V. Ditzel	Kimberly-Clark Co	La Salle
George Dixon	Spencer Kellogg & Sons, Inc.	Buffalo
L. C. Dodd	Magnus Co., Inc	Depew
T. E. Dodds	Aluminum Co. of Amer	Niagara Falls
Martin Dolge	Merchants' Assn. of N. Y.	New York
E. M. Doering	Niagara Falls Power Co	Niagara Falls
H. M. Doerschuk	Aluminum Co. of America	Niagara Falls
V. C. Doerschuk	Aluminum Co. of America	Massena
John Doll	S. K. S	Buffalo
E. Domras	D., L. & W. R. R. Co	Buffalo
James E. Donahoe	Department of Labor	New York
C. M. Donahue	Mine Safety Appliances Co.	Buffalo
W. H. Donahue	Department of Labor	Albany
D. Donaldson	Salisbury Axel Co	Jamestown
T. C. Donaldson	Buffalo, Rochester & Pittsburgh Ry	E. Salamanca
E. W. Donnigan	Buffalo Cold Stge. Co	Buffalo
Seymour W. Doran	Pratt & Letchworth Co	Buffalo
Jas. L. Dore	Plasterers' Union No. 314	L. I. City
A. G. Dorn	Shepard Elec. Crane & Hoist Co	Montour Falls
John W. Dorsey	Solvay Process Co	Syracuse
W. H. Douglas	Trico Products Corp	Buffalo
J. Dowling	Aluminum Co. of America	Niagara Falls
John F. Dowling	Department of Labor	Brooklyn
James Downe	Aluminum Co. of Amer	Niagara Falls
P. J. Downey	Department of Labor	Albany
W. D. Downey	International Ry. Co	Buffalo
William D. Downey	International Bus Corp	Buffalo
Chas. Drabble	Atterbury Motor Car Co	Buffalo
Clyde Drake	Bell Tele. Labs., Inc	New York
C. W. Drechsler	Travelers Ins. Co	Buffalo
George W. Drechsler	M. Wile & Co	Buffalo
E. Dreusike	Dolgeville Felt Shoe Co	Dolgeville
R. F. Drew	U. S. Aluminum Co	Youngstown
L. A. Drexler	Delaware Safety Council	Bethany Beach, Del.
Wm. F. Drier	International Ry. Co	Buffalo
Daniel Driscoll	Carpenters' and Joiners' Union No. 787	Brooklyn
Thomas P. Driscoll	Hartford Ind. Co	Buffalo
W. D. Drummond	General Safety Equip. Co	Cliffside, N. J.
Harry Dubinsky	Ornamental Iron Workers' Union No. 52	New York

NAME	AFFILIATION	LOCALITY
George F. Du Frane	Pierce Arrow Motor Car Co.	Buffalo
M. E. Durham	International Ry. Co.	Buffalo
Leon F. Dusing	Dusing & Hunt, Inc.	Buffalo
Henry L. Eberle	Buffalo Forge Co.	Buffalo
Paul Ecker	Carborundum Co.	Niagara Falls
W. A. Eder	Shredded Wheat Co.	Niagara Falls
Hon. Edwd. W. Edwards.	New York State Industrial Board	New York
W. J. Edwards	Trunk Line Association	New York
Frank Egan	Elevator Constructers' Union No. 1	New York
Frank Eggert	Fedders Mfg. Co., Inc.	Kenmore
Harry T. Eggert	National Biscuit Co.	New York
A. F. Eggleston	The Lane Construction Corp.	Meriden, Conn.
Edw. O. Ehle	Buffalo Forge Co.	Buffalo
Edw. J. Ehrhardt	Enterprise Association Steamfitters	Long Island City
Carl Eismann	Watkins Ring Co.	Buffalo
John P. Ellinger	Rome Wire Co. Div. of General Cable Corp.	Rome
D. G. Ellsworth	Wood Products Co.	Buffalo
Philip H. Ellsworth	Otis Elevator Co.	Buffalo
Annett Elwes	Great Lakes Portland Cement Co.	Great Lakes
William G. Emandater	Niagara Junction Ry.	Niagara Falls
W. H. Emerson	Consolidated Expanded Metal Co.	Buffalo
Frank W. Emery	Carborundum Co.	Niagara Falls
Albert L. Endres	Elm Vocational School	Buffalo
R. E. Endress	Archer Daniels Midland Co.	Buffalo
John English	International Railway Co.	Buffalo
Thomas Enlow	Kertel Stationery	Buffalo
Willis Ensminger	Dunlop Tire & Rubber Co.	Buffalo
A. G. Erftenbeck	King Mfg. Corp.	Buffalo
Henry N. Ernst	DuPont Rayon Co.	Buffalo
W. R. Erskine	Department of Labor	Rochester
Herman P. Eschner	Buffalo School Department.	Buffalo
M. Vera Estanol	New York & Cuba Mail S. S. Co. New York & Porto Rico S. S. Co. Mallory Steamship Co. Clyde Steamship Co.	New York
Julius Esterman	State Insurance Fund	Rochester
David J. Evans	Rome Wire Co. Div. of Gen. Cable Corp.	Rome
Fred. E. Evans	Spencer Kellogg & Sons, Inc.	Buffalo
F. S. Evans	Buffalo Cement Co.	Buffalo
S. Ed. Everitt	Kotex Co. of Canada, Ltd.	Niagara Falls
James F. Ewing	Wickwire Spencer Steel Co.	Buffalo
A. H. Farr	Rome Wire Co. Div. of Gen. Cable Corp.	Buffalo
Arthur A. Farrell	Department of Labor	New York
P. F. Farrell	Local 62, Ornamental Iron Workers	New York
Harry C. Fath	Vanadium Corp. of America.	Niagara Falls
Milton H. Faubring	Archer Daniels Midland Co.	Hamburg
Edward J. Fee	Elm Vocational School	Buffalo
George F. Feidner	Pierce Arrow Motor Car Co.	Buffalo
H. E. Fels	R. Wurlitzer Mfg. Co.	No. Tonawanda
Nelson Felten	Niagara Falls *Gazette*	La Salle

NAME	AFFILIATION	LOCALITY
W. P. Fennelay	Bethlehem Steel Co	Buffalo
Benj. R. Fenton	Pierce Arrow Motor Car Co.	Buffalo
Adelia Ferchen	Shredded Wheat Co	La Salle
W. A. Ferguson	Hooker Electro-Chem. Co	Niagara Falls
Julius F. Ferrand	Pierce Arrow Motor Co	Buffalo
R. B. Ferris	Superior Screw & Bolt Mfg. Co	Cleveland, Ohio
W. S. Ferris	Domor Chair Co	Elkhart, Ind.
Joseph A. Fette	Consolidated Expanded Metal Co	Buffalo
Carl P. Field	Clipper Belt Lacer Co	Chestnut Hill, Pa.
Russell Field	Lehigh Valley R. R. Co	Buffalo
E. H. Fiesinger	Robert F. Coleman, Inc	Syracuse
Stanley Figler	Pullman Co	Buffalo
J. F. Filion	Norton Company	Chippewa, Ont., Can.
Franz Findberg	DuPont Rayon Co	Buffalo
B. Finn	Kensington Dairy	Buffalo
Rudolph Fischer	Donner Steel	Buffalo
J. A. Fish	Roessler & Hasslacher Chemical Co	La Salle
C. B. Fisher	Great Lakes Portland Cement Corp	Buffalo
Martin Fisher	Carborundum Co	Niagara Falls
R. D. Fisher	Miller Hand Truck Brake Co	Chicago, Ill.
R. J. Fitzgerald	Carborundum Co	Niagara Falls
Paul E. Fitzpatrick	Advisory Council, State Insurance Fund	Buffalo
C. G. Fleck	International Ry. Co	Niagara Falls
C. V. Fleck	International Ry. Co	Niagara Falls
M. R. Flienl	Y. M. C. A. Institute of Technology	Buffalo
G. C. Flinn	Beaver Products Co	Akron
H. C. Flinn	Beaver Products Co	Akron
Andrew Flohr	Helios Mfg. Corp	Buffalo
Edward Flore	Hotel & Restaurant Employees' Int. Alliance & B. O. L. of America	Buffalo
Geo. West Flynn, 2d	Mechanical Section, DuPont Rayon Co., Inc	Buffalo
Mrs. J. Flynn		Buffalo
James A. Flynn		Buffalo
Paul E. Foehl	Johnson & Johnson	Buffalo
J. Harry Foley	American Bridge Co	Elmira
Peter Folino	M. Wile & Co	Buffalo
H. B. Fonda	Burroughs, Wellcome & Co., Inc	New York
John Forber	Donner Steel Co	Buffalo
J. H. Ford	Lehigh & New England R. R. Co	Pen Argyl, Pa.
Paul A. Fortier	Rome Wire Co	Buffalo
R. E. Foster	Amer. Laundry Machinery Co	Rochester
Albert E. Fox, Jr	Amer. Abrasive Metals Co	Buffalo
Charles Fox	Utica Gas & Electric Co	Utica
Henry H. France	Mica Insulator Co	Schenectady
Ed. Frank	Hewitt Rubber Co	Buffalo
Henry Frank	Steinl & Sons	Buffalo
William Frank	Pierce Arrow Motor Car Co.	Buffalo
John B. Franklin	Bricklayers State Conference	New York
John R. Franklin	U. S. Aluminum Co	Niagara Falls

NAME	AFFILIATION	LOCALITY
M. M. Fredel	Hecker-Jones-Jewell Milling Co	New York
Edward Fredericks	Buffalo Forge Co	Buffalo
Norman Fredriksen	Bethlehem Steel Co	Lackawanna.
Harry J. Fried	National Biscuit Co	Buffalo
Henry Friedrich		Buffalo
C. M. Freeman	Dusing & Hunt, Inc	Buffalo
Robert Freeman		Niagara Falls
Fred Fremming	Pierce Arrow Motor Car Co.	Buffalo
G. E. French	Liberty Mutual Ins. Co	Buffalo
Mrs. J. A. Frette		Buffalo
Harold N. Fuller	Atlas Steel Corp	Dunkirk
Walter Funnell	N. Y., Ontario & Western R. R	Middletown
Wm. H. Furman	Department of Labor	Albany
F. Furrow	Hooker Electro-Chemical Co.	Niagara Falls
Fred Gaa	Brotherhood of Painters' Union No. 51	New York
H. W. Gabor	State Insurance Fund	New York
H. B. Gaffers	John S. Tilley Ladders Co., Inc	Watervliet
Harold Gallagher	Standard Foundry	Buffalo
John T. Ganley	Niagara Alkali Co	Niagara Falls
Arthur G. Gardner	International Railway Co	Buffalo
M. L. Gardner	Michigan Metal Products Co	Battle Creek, Mich.
W. R. Garland	Smith & Sons Corp	N. Tonawanda
George Gasparr	Hooker Electro-Chemical Co.	Niagara Falls
H. D. Gates	Pangborn Corp	Hagerstown, Md.
William Gates	Peter's Chocolate Co	Fulton
Owen W. Gay	DuPont Rayon Co	Buffalo
Herman Gebauer	Kotex Mfg. Co., Inc	La Salle
G. Gebler	Y. M. C. A. Institute of Technology	Depew
John Geddes	Carborundum Co	Niagara Falls
Charles A. Gehl	International Railway Co	Buffalo
George J. Geier	Hewitt Rubber Co	Buffalo
Clarence W. Geiger	DuPont Rayon Co	Tonawanda
G. H. Genger	Empire State Ice Co	Cleveland, Ohio
Samuel Geraci	Dunlop Tire Co	Buffalo
Hon. James W. Gerard	N. Y. Industrial Survey Commission	New York
James L. Gernon	Department of Labor	New York
Charles Gertis	Pierce Arrow Motor Car Co.	Buffalo
John Gertz	Kimberly-Clark Co	Niagara Falls
Ben Gibson	Hooker Electro-Chemical Co.	Niagara Falls
Chaumay L. Gifford	Carborundum Co	Niagara Falls
Duncan Gillies	Operative Plasterers' Union No. 9	Buffalo
V. A. Gillies	Dunlop Tire & Rubber Corp.	Buffalo
J. E. Gilligan	State Insurance Fund	Buffalo
D. B. Gilmour	American Mutual Liability Insurance Co	Syracuse
James L. Gilson	Bethlehem Steel Co	Buffalo
Frank B. Gilson	Can. Shredded Wheat Co	Niagara Falls
L. J. Glascock	Dunlop Tire & Rubber Corp.	Buffalo
Michael Glaser	Carpenters' Union No. 1164.	Richmond Hill, N. Y. City
E. J. Glavin	Kimberly-Clark Co	Niagara Falls
W. A. Gleason	Hammermill Paper Co	Erie, Pa.
Frank H. Glenwood	Defiance Paper Co	Niagara Falls

NAME	AFFILIATION	LOCALITY
Vincent Glide	Levering & Garrigues Co	New York
Vincent Glusek	Niagara Machine & Tool Wks	Buffalo
U. L. Goff	Donner-Hanna Coke Co	Buffalo
Robert Golden	Carpenters and Joiners' Union No. 1164	Brooklyn
Paul Goldner	National Aniline Co	Buffalo
Louis Goldring		Buffalo
Elmer W. Goll	Rating Board	Buffalo
William D. Goodall	State Department of Labor	Buffalo
M. & J. Goodman		Cleveland, Ohio
Walter Goodroe	Kimberly-Clark Co	Niagara Falls
E. J. Goodsell	American Railway Express Co	Buffalo
E. K. Gorman	Trunk Line Freight Inspection Bureau	Buffalo
Mrs. W. J. Gorman		Buffalo
William J. Gorman	Associated Industries, Inc.	Buffalo
Frank Gorog	Wickwire Spencer Steel Co.	Buffalo
J. T. Gough	Aluminum Co. of America	Massena
J. K. Gould	U. S. L. Battery Corp	Niagara Falls
John Gow	Travelers Insurance Co	Buffalo
A. P. Gowan	Hartford Accident & Indemnity Co	Buffalo
C. C. Gradolph	New York, Chicago & St. Louis R. R. Co	Buffalo
John J. Graf	American Brass Co	Buffalo
Robert Graham	Norton Company	Niagara Falls
Dr. C. T. Graham-Rogers	Department of Labor	New York
H. J. Grant, M.D		Buffalo
Joseph L. Grant	Hewitt Rubber Co	Buffalo
J. R. Grant	New York & Queens Elec. Light & Power Co	Long Island City
Milton L. Grant	Norton Company	Niagara Falls
Robert E. Gray	Kimberly-Clark Co	Niagara Falls
James E. Green, Jr	State Accident Fund	Baltimore, Md.
T. C. Gregory	Travelers Insurance Co	Buffalo
Robert Gregson	Washburn Crosby Co	Buffalo
Albert Greuter	National Aniline & Chemical Co	Buffalo
Paul M. Grezelle	U. S. Aluminum Co	Buffalo
Harold Grieser	Spaulding Fibre Co., Inc	Tonawanda
Frank Grimmer	International Railway Co	Buffalo
Hector C. Griswold	American Cable Co., Inc	New York
F. A. Groepler	Department of Labor	New York
William H. Groll	Atlas Gypsum Corp	Clarence
Otto S. Gropper	Operative Plasterers' and Cement Finishers' Assn. No. 314	Woodside, N. Y. City
Albrecht Gross	Kimberly-Clark Co	Niagara Falls
Anton Grossmann	Steinl & Sons	Buffalo
James K. Groves	Donner-Hanna Coke Corp	Buffalo
William Groves	Iroquois Gas Corp	Buffalo
William J. Guilbert	Buff. Chamber of Commerce	Buffalo
Frank Guillemont	Carborundum Co	Niagara Falls
William C. Guist	Wickwire Spencer Steel Co.	Buffalo
J. E. Gulhelge		Buffalo
Harry Haas	Acheson Graphite	Buffalo
C. H. Haberstroh	Pennsylvania R. R. Co	Buffalo
Alvin E. Hack	Buffalo Forge Co	Buffalo
Roy R. Hadsell	New York State Railways	Rochester

NAME	AFFILIATION	LOCALITY
William F. Hahm	Buffalo Forge Co	Buffalo
Charles J. Hahn	Department of Labor	Buffalo
C. F. Hainer	Dunlop Tire & Rubber Corp.	Buffalo
Francis J. Haley, M. D.	Department of Labor	Buffalo
James P. Hallahan	Corning Glass Works	Corning
E. W. Hallett	General Abrasive Co., Inc.	Niagara Falls
M. O. Halverstadt	Utica Mutual Ins. Co	Buffalo
W. J. Hambly	International Railway Co	Buffalo
Hon. Jas. A. Hamilton	Department of Labor	New York
J. C. Hamke	Aluminum Co. of America	Niagara Falls
E. M. Hammerschlag	Ocean Acc. & Guar. Corp., Ltd	New York
D. C. Hammond	Great Lakes Portland Cement Co	Buffalo
M. H. Hammond	Great Lakes Portland Cement Co	Buffalo
Charles E. Handley	Niagara Falls *Gazette*	Niagara Falls
George Handyside	Buffalo Forge Co	Buffalo
Frank Hanley		Buffalo
T. F. Hanley	Ironworkers' Union No. 361	Brooklyn
A. E. Hann		Buffalo
S. Hanneman	American Brass Co	Buffalo
G. Haustein	American Lithographic Co.	New York
Charles W. Hanson	Carpenters' Union No. 257	New York
P. S. Hanson	Heinz & Mumscheur	Buffalo
J. D. Harnden	General Electric Co	Schenectady
F. Marshall Harp		Buffalo
Lewis G. Harriman	Buff. Chamber of Commerce	Buffalo
E. W. Harrington	Kojene Products Corp	Buffalo
W. G. Harrington	Hercules Powder Co	Kingston
Alfred Harsch	Pullman Co	Buffalo
F. Hartenstien	Lehigh Valley R. R	Bethlehem, Pa.
E. P. Hartwig	State Bureau of Rehabilitation	Buffalo
E. F. Harvey	Buffalo Slag Co	Buffalo
Howard T. Harvey	Lehigh & New England R. R. Co	Pen Argyle, Pa.
W. J. Harvie	United Traction Co	Albany
Peter Hassenpatz		Buffalo
John J. Hassett	Plumbers' Union No. 465	New York
Dr. Leonard W. Hatch	New York State Industrial Board	New York
W. J. Hatch	Spencer Kellogg & Sons, Inc.	Buffalo
L. A. Havens	Department of Labor	New York
Elizabeth A. Hawkes	Kojene Products Corp	Buffalo
James M. Hawkins	Bradley Wash Fountain Co	Buffalo
E. B. Hawks	State Insurance Fund	Syracuse
George J. Hay	National Aniline Co	Buffalo
William Hayes	Hooker Electro-Chemical Co.	Buffalo
Carl E. Hayn	International Ry. Co	Buffalo
G. F. Hays	Niagara, Lockport & Ontario Power Co	Buffalo
Mrs. Alice Hayward	Dahlstrom Metallic Door Co	Buffalo
M. J. Healy	U. S. Lighting Co	Niagara Falls
William A. Healy	Department of Labor	New York
B. R. Heath	Pillsbury Flour Mills Co	Buffalo
Charles C. Hedrick	Spencer Lens Co	Buffalo
Clayton Heerdt	Elm Vocational School	Buffalo
Axel Heilborn	Niagara Alkali Co	Niagara Falls
Harry J. Heiney	Shredded Wheat Co	Niagara Falls
William G. Heinz		Niagara Falls

NAME	AFFILIATION	LOCALITY
John W. Heffley	Donner Steel Co., Inc	Buffalo
Karl L. Helfrich	Elm Vocational School	Buffalo
Fred C. Hennick	Pierce Arrow Motor Car Co.	Buffalo
John W. Henderson	Vocational Dept. of Education	Buffalo
William Henderson	National Aniline Co	Williamsville
Myron Nellis Hendrick	Roessler & Hasslacher Chemical Co	Niagara Falls
W. Hendry	Norton Company	Chippewa, Ont.
John A. Henry	Ocean A. & G. Corp	Buffalo
John W. Henry	Van Cycle Hardware Corp.	Buffalo
J. Allen Henshaw	Buffalo, Rochester & Pittsburg Railway Co	Buffalo
John D. Hepfer	Dunlop Tire Co	Buffalo
Mrs. A. Herniman	Trico Products Corp	Buffalo
Frank Herzog		Buffalo
John Herzog	Fidelity & Casualty Co	New York
Charles F. Hess	Buffalo Cold Storage Co	Buffalo
P. D. Hess	Brown-Lipe Gear Co	Syracuse
E. G. Hewitt	Shredded Wheat Co	Niagara Falls
T. N. Hewitt	John P. Hancock Insurance Co., Inc	Niagara Falls
V. Heybourna	Y. M. C. A. Inst. of Tech.	Tonawanda
Thomas E. Hicks	Johnson & Johnson	New Brunswick, N. J.
G. H. Higgins	Industrial Department, City Schools	Buffalo
James W. Higgins	Chief of Police Department.	Buffalo
E. Highlen	Atlas Steel Co	Dunkirk
Charles Hildebrand	Buffalo, Rochester & Pittsburg Ry	Buffalo
L. H. Hildebrandt	Buffalo Steam Pump Co	No. Tonawanda
G. G. Hill	Aluminum Co. of America	Niagara Falls
Henry Hill	Kimberly-Clark Co	Niagara Falls
Mrs. J. C. Hill	Larkin Co., Inc	Kenmore
Jay C. Hill	Larkin Co., Inc	Kenmore
John J. Hilliard	Shredded Wheat Co	Niagara Falls
Earl F. Hines	National Aniline Co	Buffalo
S. P. Hines	Yawman & Erbe Mfg. Co	Rochester
Henry Hird	Niagara Falls Power Co	No. Tonawanda
A. W. Hislop	Pierce Arrow Motor Car Co.	Buffalo
John A. Hislop	Peckham Vocational School.	Buffalo
George Hobson	Pierce Arrow Motor Car Co.	Buffalo
Frank W. Hochgrebe	Donner-Hanna Coke Corp.	Buffalo
A. L. Hock	International Railway Co.	Buffalo
E. F. Hocke	Niagara Alkali Co	Niagara Falls
C. L. Hodgkins	Shredded Wheat Co	Niagara Falls
G. J. Hoehn	Pullman Co	Buffalo
R. J. Hoehn	Pullman Co	Buffalo
Ernest Hoeljerl	American Brass Co	Buffalo
A. B. Hoff	Erie R. R. Co	New York
Charles J. Hoffman	Consol. Exp. Metal Co	Wheeling, W. Va.
George H. Hoffman	Pierce Arrow Motor Car Co.	Buffalo
Howard Hoffman	International Railway Co	Buffalo
William Hoffman	Buffalo Forge Co	Buffalo
John Hofmann	Department of Labor	New York
O. J. Hogan	Schenectady Ry. Co	Schenectady
John Hohngren		Niagara Falls
R. P. Holden	Federal Mutual Liability Ins. Co	Buffalo
H. R. Holman	Acheson Graphite Co	Niagara Falls
John W. Holmes	American Locomotive Co.—Brooks Works	Dunkirk

NAME	AFFILIATION	LOCALITY
Frederick H. Holtz	The Speed Tag Fastener Co., Inc.	Buffalo
John E. Holtz	Beaver Products Co., Inc.	Akron
F. W. Holz	American Brass Co	Buffalo
F. J. Honadle	Carborundum Co	Niagara Falls
P. J. Honan	Department of Labor	New York
P. H. Hourigan, M.D.	Larkin Co., Inc.	Buffalo
Dr. Visser T. Hooft	Novadel Process Corp	Buffalo
William Hooley	International Railway Co	Buffalo
H. A. Hoover	National Carbon Co	Niagara Falls
C. Hornsby	Wright & Kremers	Niagara Falls
J. Horohoe	J. H. Williams & Co	Buffalo
A. J. Horton	American Sales Book Co	Niagara Falls
Louis Horvat	Bethlehem Steel Co	Lackawanna
R. Hough	Bethlehem Steel Co	Buffalo
William G. Howard	Conservation Department	Albany
Major S. Howe	Hecker-Jones-Jewell Milling Co	Buffalo
William H. Howell	Union Carbide Co	Niagara Falls
S. J. Huckins	Buffalo Bronze Die Casting Co	Niagara Falls
Hazel M. Huffman	Gilman-Fanfold Corp., Ltd.	Niagara Falls
Marian Hugenschmidt	Utica Mutual Insurance Co.	Forks
Steven Hugg	U. S. L. Battery Corp	Niagara Falls
Glenn Huggins	John P. Hancock Co., Inc.	Niagara Falls
H. L. Hughes, Jr	The Carborundum Co	Niagara Falls
J. H. Hughes	The Carborundum Co	Niagara Falls, Can.
Robert B. Hughes	Ætna Life Insurance Co	Buffalo
W. E. Hughes	Rochester Gas & Elec. Corp.	Rochester
W. C. Hulbert	Hewitt Rubber Co	Buffalo
B. A. Hulsman	Hynson, Westcott & Dunning	Baltimore, Md.
Claud H. Hultzen	Chamber of Commerce	Niagara Falls
George C. Hummel	Elm Vocational School	Buffalo
Edward C. Humphreys	Hooker Electro-Chemical Co.	Niagara Falls
Albert H. Hunt		Buffalo
Edward Hunt	Wickwire Spencer Steel Co.	Buffalo
Francis C. Hunt	Hooker Electro-Chemical Co.	Niagara Falls
G. W. Hunt	National Carbon Co	La Salle
R. L. Hunt	National Aniline Co	Buffalo
Edgar Hurley	Donner-Hanna Coke Co	Buffalo
Michael Hurley	DuPont Rayon Co	Buffalo
William P. Hurley	State Insurance Fund	Buffalo
Archey Hutcheson	Buffalo Forge Co	Buffalo
H. H. Hutchinson	DuPont Rayon Co	Buffalo
Charles J. Hute	Niagara Gorge R. R. Co.	Sanborn
Charles L. Hutson	Iron Workers' Union No. 40.	New York
Edmond N. Huyck	F. C. Huyck & Sons	Albany
Robert I. Huyler	Lehigh & Hudson River Ry. Co	Warwick
J. Ingebretsen	Otis Elevator Co	Yonkers
Mrs. G. Frank Ingersoll		Buffalo
Lee Insley	Wear Proof Mat Co	Rochester
Bruce Irwin	Aluminum Co. of America	Niagara Falls
A. T. Irwin	Harrison R. E. Corp	Buffalo
W. M. Irwin	Department of Labor	Buffalo
A. O. Jackson	Ætna Life Insurance Co	New York
Col. J. P. Jackson	The New York Edison Co	New York
K. E. Jackson	Bethlehem Steel Co	Lackawanna
W. Jackson	Kimberly-Clark Co	Niagara Falls
W. O. Jackson	Atlas Steel Corp	Dunkirk

NAME	AFFILIATION	LOCALITY
C. Jacobsen	Carpenters' Union No. 257	New York
Jerome Jaffrey	Jaffrey-Fell Co	Buffalo
Benjamin Jakes	Spaulding Fibre Co	Tonawanda
Vincent F. James	Y. M. C. A. Inst. of Tech	Kenmore
Walter R. Jameson	Wm. A. Rogers, Ltd	Niagara Falls
A. S. Jamison	Donner-Hanna Coke Corp	Buffalo
P. Jammasen	U. S. Rubber Plant	Buffalo
Harry L. Jannicky	Fidelity & Casualty Co	Buffalo
Paul Janowsky	Trico Products Corp	Buffalo
C. Beekman Jansen	Cornell Steamboat Co	Kingston
Rufus Jarnagin	State Bureau of Rehabilitation	Buffalo
Frank Jay	Shredded Wheat Co	La Salle
H. R. Jay	Carborundum Co	Niagara Falls
Wm. B. Jay	Niagara Falls Power Co	Niagara Falls
D. S. Jenkins	Aluminum Co. of America	Niagara Falls
J. H. Jenkner	Vanadium Steel Co	Niagara Falls
W. B. Jennings	Liberty Mutual Ins. Co	Buffalo
Holger Jensen	Maryland Casualty Co	Baltimore, Md.
H. P. Jensen	Kimberly-Clark Co	Niagara Falls
Charles Jerger	Rome Wire Co	Buffalo
G. W. Jester	Compensation Inspection Rating Board	Kenmore
Theodore C. Jewett	Larkin Co., Inc	Buffalo
S. Joblonski	Carborundum Co	Niagara Falls
Miss Rose Jochum	Rome Wire Co	Buffalo
Albert Johnson		Buffalo
Annis Johnson	Dr. Rickardson	Providence, R. I.
A. F. Johnson	Aluminum Co. of America	Niagara Falls
A. L. Johnson	Hynson, Westcott & Dunning	New York
C. Wm. Johnson	Department of Labor	Buffalo
Don F. Johnson	Don Johnson & Co	Buffalo
Frank S. Johnson	Geneva Preserving Co	Geneva
Geo. A. Johnson	W. H. Miner, Inc	Chicago, Ill.
J. Harry Johnson	Salisbury Axle Co	Jamestown
Laverne Johnson	Pierce Arrow Motor Car Co.	Kenmore
Melville D. Johnson	Brown-Lipe Gear Co	Syracuse
Edward G. Johnstone	Vanadium Corp. of America.	Niagara Falls
Thomas T. Johnstone	Utica Mutual Insurance Co.	Buffalo
Edward C. Jolley	The Fyr-Fyter Co	Buffalo
Louis E. Jolz	Aluminum Co. of America	Niagara Falls
C. L. Jones	Hercules Powder Co	Wilmington, Del.
E. E. Jones	Surty Mfg. Co	Chicago, Ill.
F. P. Jones	Lincoln Radiator Corp	Utica
G. C. Jones	The W. S. Tyler Company	Cleveland, Ohio
Jerry Jones		Buffalo
Percy Jones	Niagara Falls Power Co	La Salle
Roland Jones	Surty Mfg. Co	Chicago, Ill.
Mrs. T. S. Jones	Otis Elevator Co	Buffalo
Thomas S. Jones	Otis Elevator Co	Buffalo
Walter H. Jones	Can. National Railways Co.	Montreal, Can.
William H. Jones	Rome Wire Co	Buffalo
William H. Jones	Chevrolet Motors Co	Buffalo
Patrick R. Jordan	Great Lakes Portland Cement Co	Buffalo
William F. Jordan	Department of Labor	Buffalo
C. H. Jorgenson	Pillsbury Flour Mills	Buffalo
S. Josefiak		Buffalo
John J. Joyce, Jr	Beaver Products Co., Inc	Buffalo
Chas. A. Judge	N. Y. Carpenters' District Council	New York

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F. D. Jutras	Mica Insulator Co	Schenectady
James H. Kalar	Niagara Falls Power Co	Niagara Falls
Anthony Kalwoda	Hooker Electro-Chemical Co.	Niagara Falls
Ernest C. Kalz	Gleasner & Rupp	Buffalo
Herman Kamholz	Dunlop Tire Co	Buffalo
Kate L. Kane	Department of Labor	Rochester
George J. Karle, Jr	Karle Saw Co., Inc	Buffalo
A. Kastner	Donner-Hanna Coke Corp	Buffalo
C. P. Kauffman	U. S. L. Battery Corp	Niagara Falls
Frank Kaufman	International Railway Co	Buffalo
William J. Kaumeyer, Jr.	Niagara Falls Power Co	La Salle
Harry S. Kearby	Kotex Mfg. Co., Inc	Niagara Falls
John J. Keating	State Insurance Fund	Buffalo
Thomas Keefe	American Bridge Co	Elmira
Rae W. Keeler	U. S. Fid. & Cas. Co	Syracuse
Raymond W. Keeler	Oneeta Knitting Mills	Utica
Edward Keenan	International R. R. Co	Buffalo
F. C. Keene	International Heater Co	Utica
J. D. Keeper	American Car & Foundry Co.	Buffalo
Victoria Kelcey		Toronto, Can.
W. H. B. Kellam		Kenmore
Floyd Keller	Niagara Alkali Co	Niagara Falls
H. P. Keller	Fillmore Ave. Foundry & Iron Works	Buffalo
W. R. Keller	Pillsbury Flour Mills Co	Buffalo
Daniel Kelley	Ironworkers' Union No. 361	Brooklyn
R. H. Kelley	American Brass Co	Buffalo
Edw. G. Kellner	Crystal Ice Delivery Co	Buffalo
D. P. Kellogg	Hooker Electro-Chemical Co.	Niagara Falls
William E. Kelly	Buffalo, Rochester & Pittsburg Ry. Co	Rochester
Paul Kelm	Carpenters' Union No. 1164	Brooklyn
Alex. Kelso	New York Building Trades Council	New York
Louis Kelvit	Bd. of Ed., Peckham Voc. School	Buffalo
C. R. Kendall	New York Telephone Co	New York
John P. Kendrick	Buffalo, Rochester & Pittsburg Ry. Co	Salamanca
C. C. Kennan	Niagara Falls Power Co	Niagara Falls
A. J. Kennedy	American Cyanamid Co	Niagara Falls, Can.
Francis H. Kennedy	Dunlop Tire & Rubber Co	Buffalo
James B. Kennedy	Kotex Mfg. Co., Inc	Niagara Falls
John S. Kennedy	New York Telephone Co	New York
Nathaniel Kent	Burns Bros	New York
V. A. Kenyon	Hartford Acc. & Indem. Co.	Buffalo
Duncan T. Keppy	Canadian Shredded Wheat Co., Ltd	Niagara Falls, Can.
David Kerr	M. Wile Co	Buffalo
W. L. Kester	Niagara Falls *Gazette*	Niagara Falls
H. B. Ketzle	American Car & Foundry Co	Buffalo
Geo. M. Kieffer	Kertscher & Co	Elmira
Alex J. Kind	I. R. C. Ry. Co	Buffalo
De Witt L. King	The Rudolph Wurlitzer Mfg. Co	No. Tonawanda
H. G. King	The Manufacturers' Ass'n	Jamestown
Jack B. King	International Bus Co	Buffalo
Walter G. King	American Optical Co	New York

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Miss Alice M. Kinzie	M. Wile & Co., Inc	Buffalo
Norman A. Kirby	P. A. M. Car Co	Buffalo
George M. Kirchmer	The Brooklyn Union Gas Co.	Brooklyn
Arthur A. Kisker	Fillmore Ave. Foundry & Iron Co	Buffalo
George J. Klein	Buffalo Forge Co	Buffalo
Joseph E. Klein	International Railway Co.	Buffalo
F. J. Kleinhans	Arco Vacuum Corp., Div. of American Radiator Co	Buffalo
John Klouse	U. S. Aluminum Co	Niagara Falls
Harry Knack	Phoenix Gypsum Co	Oakfield
Mrs. D. M. Knarr		Buffalo
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M. B. Knarr	*Gazette* Publishing Co	Niagara Falls
Leonard M. Knight	American Brass Co	Buffalo
Theo. E. Knoll	Donner Steel Co	Buffalo
H. R. Knox	Union Carbide Co	Niagara Falls
Edwin Koch	Lehigh Valley R. R	Buffalo
Edw. H. Koch	The Republic Metalware Co.	Buffalo
Ernest Koehler	Buffalo Structural Steel Co.	Buffalo
F. O. Koetteritz	Remington Typewriter Co.	Ilion
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Howard H. Kohler	Jeffrey-Fell Co	Buffalo
Paul J. Kohler	Jeffrey-Fell Co	Buffalo
George H. Kohst	Great Lakes Portland Cement Corp	Buffalo
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Edward C. Koller	Pierce Arrow Motor Car Co.	Buffalo
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Edward Kolza	American Radiator Co	Buffalo
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Elmer Lampman	National Carbon Co	Niagara Falls
J. B. Lampman	International Railway Co.	Buffalo
L. W. Lamson	American Brass Co	Buffalo
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F. C. Lane	Childs Co	New York
Harold Lane	Jeffrey-Fell Co	Buffalo
M. B. Lane	U. S. Aluminum Co	Niagara Falls
W. B. Lane	American Locomotive Co.	Dunkirk
Alwinnie Lange	Shredded Wheat Co	La Salle
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William Lewis	Niagara Falls Power Co.	Niagara Falls
Edward S. Licht	Empire Gas & Electric Co.	Geneva
Frank J. Limburg	Pierce Arrow Motor Car Co.	Buffalo
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Clarence J. Lipp	Y. M. C. A. Inst. of Tech.	Buffalo
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Roe M. Lotz	Donner-Hanna Coke Corp	Buffalo
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James C. MacLagan	J. H. Williams & Co	Buffalo
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William McCarthy	Marble Polishers' International Union	New York
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Frederick C. McClure	National Biscuit Co	Buffalo
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T. F. McCormick	U. S. Aluminum Co	Niagara Falls
John W. McCracken	Department of Labor	Rochester
James E. McDermott	American Radiator Co	Buffalo
C. C. McDonald	The Office Toilet Supply Co.	Buffalo
F. J. McDonald	U. S. L. Battery Corp	Niagara Falls
George McDonell	Hooker Electro-Chemical Co.	Niagara Falls
Frank McDonnell	Donner Steel Co	Buffalo
John N. McDowell	Department of Labor	Albany
Frank McGarrett	Bradley Washfountain Co	Niagara Falls
George F. McGarrett	W. M. A. K. Liberty Bank	Buffalo
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C. W. McGinley	International Ry. Co	Niagara Falls
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Thomas McGirr	Plumbers' Unions, Manhattan and The Bronx	New York
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Luke McGluke	*The Ladies Home Journal*	New York
John S. McIntire	Postal Telegraph-Cable Co.	Buffalo
H. McKay	Niagara Falls Power Co.	Niagara Falls
Oliver McKean		Buffalo
D. J. McKenzie		Buffalo
F. W. McKibbin	Carborundum Co.	Niagara Falls
F. F. McLaughlin	Rock Cut Stone Co.	Syracuse
Hugh J. McLaughlin	U. S. Blacksmiths' Helpers' Union No. 4	New York
Margaret McLoughlin	Department of Labor	Buffalo
Edward McMahon	Archer Daniels Midland Co.	Buffalo
M. M. McMahon	Department of Labor	New York
James B. McManus	Secretary, Delaware Industrial Accident Board	Delaware
G. W. McMein	Department of Labor	New York
Harold D. McNamara	Norton Company	Niagara Falls
John McNamara	Plumbers' Union No. 1	Brooklyn
L. A. McNamara	New York State Employment Bureau	Buffalo
Henry McNulty	New York, Ontario & Western Ry. Co	Norwich
T. F. McNutt	American Mut. Liab. Ins. Co.	Syracuse
William H. McNutt	Analox Paint Co. & McNutt Can Co	New York
Don McPherson	DuPont Cellophane Co.	Buffalo
R. L. McQuillan	Burroughs, Wellcome & Co.	Kenmore
George McRonald	Federal Telephone & Telegraph Co.	Buffalo
Leo H. Machelor	Niagara Wall Paper Co.	Lewiston
J. Mack	Pfandler Co	Rochester
LeRoy D. Mack	Michigan Limestone & Chemical Co.	Buffalo
R. W. Mack	Great Lakes Portland Cement Co	Buffalo
Neil Madigan	American Car & Fdry. Co.	Buffalo
Howard C. Madson	Chicago & North Western Ry. Co	Buffalo
Charles B. Magan	Department of Labor	Gardiner
George L. Maginn	Carborundum Company	Niagara Falls
G. A. Magnuson	Carpenters' Union No. 2236.	New York
Edward Mahoney	Burroughs Wellcome & Co.	New York
George V. Mahoney	Delaware, Lackawanna & Western R. R. Co	Buffalo
George Maier	The Crowe Mfg. Co	Buffalo
Rev. William Mailis		Buffalo
Joseph Maley	Barcalo Mfg. Co	Buffalo
Henry W. J. Malinowski	Elm Vocational School	Buffalo
John F. Mallon	American Pad Co	Kenmore
William B. Maloney	Steam Fitters' Union No. 395	Buffalo
A. R. Manduson	Delaware, Lackawanna & Western R. R. Co	Buffalo
Joseph Mandio	Niagara Gorge R. R. Co.	Niagara Falls
S. V. Maney	Travelers Insurance Co	Batavia
Joseph C. Manning	Bethlehem Steel Co	Buffalo
John Manterth	Ontario (Can.) Department of Labor	Toronto, Can.
Walter L. Manz	Carborundum Co.	Niagara Falls
William A. Marakle	Department of Labor	Rochester

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Peter Maratta	M. Wile Co	Buffalo
Elmer Henry Maring	J. W. Pohlman Foundry Co.	Buffalo
Stan R. Markman	Great Lakes Portland Cement Co	Buffalo
James Marks	Donner Steel Co	Buffalo
William H. Marquardt	Worthington Pump & Machine Corp	Buffalo
R. Martin	Wheats Ice Cream Co	Buffalo
C. W. Mason	Y. M. C. A. Inst. of Tech.	Buffalo
Howard A. Mason	Gould Coupler Co	Depew
Walter T. Massing		Buffalo
James Masterson	Archer Daniels Midland Co.	Buffalo
Vincenzo Matarrese	Hooker Electro-Chemical Co.	Niagara Falls
Roy C. Matthews	Pierce Arrow Motor Car Co.	Buffalo
Mrs. S. L. Matthews		Gardenville
S. L. Matthews	Donner-Hanna Coke Corp.	Gardenville
G. W. Maulbetsch	Moench Tanning Co	Gowanda
John Maunder	Union Carbide Co	Niagara Falls
Grover Maxwell	Bricklayers', Masons', Tile and Marble Setters' Union No. 45	Buffalo
Frank A. May	American Tel. & Tel. Co. & N. Y. Tel. Co	Buffalo
Marion Mayflower	National Carbon Co	Niagara Falls
Frank S. Mazurowski	Peckham Vocational School.	Buffalo
Jas. M. Mead	Modern Electric Co	Buffalo
Walter H. Meadway	Pierce Arrow Motor Car Corp	Kenmore
John H. Mee	Acheson Graphite Co	Niagara Falls, Can.
John F. Meehan	Ornamental Iron Workers' Union No. 52	New York
Albert A. Meinhold	Elm Vocational School	Buffalo
Hans Mellan	Hewitt Rubber Co	Buffalo
N. W. Meloon	Buffalo Bronze Die Casting Co	Buffalo
Wm. G. Merowit	W. Merowit Co	Buffalo
W. W. Merrill	American Bridge Co	Pittsburg, Pa.
James Merry	Norton Company	Chippewa, Can.
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Joseph F. Metz	Maryland Casualty Co	Buffalo
Nicholas Metzger	Pierce Arrow Motor Car Co.	Buffalo
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Chas. H. Meyer	National Enameling & Stamping Co., Inc	Laurel Hill
Frank Meyer	Shredded Wheat Co	Niagara Falls
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George Meyer	Fillmore Ave. Foundry & Iron Works	Buffalo
George Meyer, Sr	Donner-Hanna Coke Co	Buffalo
Henry C. Meyer	F. Jarka Co., Inc	New York
Kolman Meyer	Buffalo Bolt Co	No. Tonawanda
L. L. Meyer	International Railway Co.	Buffalo
Leo T. Meyer	Spaulding Fibre Co., Inc	No. Tonawanda
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Bert Miller	Niagara Falls Power Co	Niagara Falls
Hon. Chas. P. Miller		So. Byron
Christ Miller	Spencer Lens Co	Buffalo
Harmon P. Miller	M. Wile & Co., Inc	Buffalo
Harry R. Miller	Kimberly-Clark Co	Niagara Falls
Martin Miller		Buffalo
Milton Miller	Pullman Co	Buffalo
Robert J. Miller	Archer Daniels Midland Co.	Buffalo
Thomas Miller	Schenectady Railway Co	Schenectady
W. G. Miller	International Railway Co	Buffalo
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Philip Moisichuk	Bethlehem Steel Co	Buffalo
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W. J. Moran	Arco Vacuum Corp	Buffalo
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George E. Morgan	Federal Mutual Liability Insurance Co	Buffalo
M. Morgan	Pennsylvania Railroad Co	Elmira
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Clarence E. Murphy	Donner Steel Co	Buffalo
Daniel T. Murphy	General Ice Cream Co	Buffalo
E. E. Murphy	U. S. Rubber Reclaiming Co	Buffalo
James Murphy	Carborundum Co	Niagara Falls
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William T. Noyes	Crowe Mfg. Co	Cincinnati, Ohio
Henry M. Nuller	Buffalo Ins. Co	Buffalo
John J. Nunan	Buffalo Forge Co	Buffalo
R. G. Nye	Buffalo Steam Pump Co	Buffalo
Albert C. Obenauer	Pierce Arrow Motor Car Co.	Buffalo
Jacob P. Obenauer	P. A. M. Car Co	Buffalo
Andrew C. O'Brien	Bricklayers' State Conference	Lockport
H. O'Brien	Plumbers' Union No. 1	Brooklyn
John T. O'Brien	N. Y. State Council of Carpenters	Syracuse
W. E. O'Brien	B. R. P. Ry	Rochester
C. H. O'Connell	International Paper Co	New York
Charles L. O'Connor	Department of Labor	Buffalo
Dr. D. C. O'Connor	International Ry. Co	Buffalo
Albert C. Odell	Capitol Dist. Empl. Assn	Cohoes
Louis Odenwald	The Fleischmann Co	Peekskill
Thomas O'Donnell	Wickwire Spencer Steel Corp.	Buffalo
Mrs. Thomas O'Donnell.		Buffalo
John M. O'Hanlon	New York State Fed. of Labor	Albany
Thos. W. O'Hara	Gould Coupler Co	Lancaster
F. A. O'Keef	U. C. Co	Niagara Falls
Albert L. Olday	Fillmore Ave. Fdry. & Iron Works	Buffalo
Barney Olsen	Donner Steel Co	Buffalo
F. Olsen	Niagara Alkali	Niagara Falls
Frank L. O'Neil	Strong, Carlisle & Hammond Co	Cleveland Hts., Ohio
W. D. O'Neill	Buffalo Wire Works Co	Buffalo
James O'Neill	U. S. Aluminum Co	Niagara Falls
Daniel H. Orr	Carborundum Co	Niagara Falls
P. E. Orr	State Ins. Fund	New York
J. Stephen Orth	Buffalo Wire Works Co	Buffalo
Kurt H. Osberg	H. P. Dempsey Const. Eng.	Buffalo
A. J. Osborne	International Ry. Co	Buffalo
Charles F. Oswald	International Ry. Co	Lockport
W. C. Otten	Operating Development Co.	Buffalo
Earl H. Owen	Carborundum Co	Niagara Falls
John R. Owen	Engineering Society of Buffalo	Buffalo
S. H. Owen	Union Carbide Co	Niagara Falls
Harry S. Owens	Donner-Hanna Coke Corp.	Buffalo
W. W. Owens	International Ry. Co	Buffalo
B. L. Pake	Great Lakes Portland Cement Corp	Buffalo
Joseph Pallone	International Ry. Co	Buffalo
Paul A. Palmer	J. H. Williams & Co	Buffalo
S. P. Palmiter	Carborundum Co	Niagara Falls
C. H. Palplow	Hewitt Gutta Percha Rubber Corp	Buffalo
E. H. Pape	Niagara Falls Power Co	Niagara Falls
J. Wood Park	Columbus McKiernan Chain Co	Tonawanda

NAME	AFFILIATION	LOCALITY
C. D. Parker	International Ry. Co	Lockport
Herbert Parkin	Taylor Instrument Co	Rochester
Foster Parmelee	Cary Safe Co	Buffalo
Jean Parrish	Y. W. C. A.	Buffalo
E. F. Parsons	Remington Type. Co	Ilion
O. F. Pasch	Carborundum Co	Niagara Falls
Alex. Paterson		Buffalo
A. G. Paterson		Buffalo
Clifton W. Patterson	Hewitt Rubber Co	Buffalo
H. E. Patterson	B., R. & P. Ry	Rochester
J. L. Patterson	U. S. Aluminum Co	Niagara Falls
Wm. J. Patterson	National Aniline Chem. Co.	Buffalo
Samuel Patti	Plasterers' Union No. 30	Brooklyn
Dr. Eugene B. Patton	Department of Labor	New York
W. A. Patton	State Department of Labor	Rochester
R. J. Payor	The Gorham Co	New York
Claude L. Peake	Amer. Radiator Co	Buffalo
Robert Pearce	Shredded Wheat Co	Niagara Falls
J. L. Pearcy	John Lowry, Inc	New York
Mrs. J. L. Pearcy		New York
C. R. Peck	Protectosed Co	Chicago, Ill.
John M. Pedley	Hooker Electro-Chem. Co.	Niagara Falls
F. W. Pedrick	Roesch Corp	Buffalo
Chas. E. Peiffer	Buffalo, Rochester & Pittsburgh Ry	DuBois, Pa.
Edward M. Pellien	Iroquois Gas Corp	Buffalo
Alfred A. Peploe	U. S. L. Battery Corp	Niagara Falls
Hon. Frances Perkins	New York State Industrial Board	New York
Mr. and Mrs. Arthur E. Perrine		Cranbury, N. J.
Joseph F. Perrung	Larkin Co	Buffalo
Norvin Perry	National Biscuit Co	New York
Alfred V. Persson	State Dept. of Education	Syracuse
H. R. Peters	Smith & Sons Corp	Buffalo
James Louis Pettit	Student	Brooklyn
Wm. E. Pettit	State Dept. of Labor	Brooklyn
Mrs. Seymour M. Peyser	Otis Elevator Co	Yonkers
Chas. Pfeiffer	Buffalo Bronze Die Cast. Co.	Buffalo
Michael Pfeiffer	International Ry. Co	Kenmore
Milton J. Pheffer	Elm Vocational School	Buffalo
Kathryne M. Phelan	Office of Commissioner of Labor and Statistics	Baltimore, Md.
D. G. Phillips	Wabash Ry. Co	St. Louis, Mo.
M. F. Phillips	State Dept. of Labor	Buffalo
Edward J. Pierce	State Dept. of Labor	New York
Allen T. Pike	Shredded Wheat Co	Niagara Falls
H. Plant	Carborundum Co	Niagara Falls
Wm. Platt	Detroit & Cleveland Nav. Co	Buffalo
Geo. Pohlman	Washburn Crosby Co	Buffalo
M. W. Pohlman	J. W. Pohlman Fdry. Co.	Buffalo
Roy Pond	Donner-Hanna Coke Corp.	Buffalo
Frank J. Ponliott	State Insurance Fund	Cohoes
Jas. H. Popkin	National District Tele. Co.	Buffalo
Robert Porter	Wood Products Co	Buffalo
Wm. K. B. Pott	Panama R. R. S. S. Line	New York
Charles Powers	Hooker Electro-Chemical Co.	Niagara Falls, Ont., Can.
B. J. Pratt	King Mfg. Co	Buffalo
Herbert Preisch	Liberty Mut. Cas. Ins. Co.	Buffalo
Fred Prevost	Brown-Lipe Gear Co	Syracuse

NAME	AFFILIATION	LOCALITY
Chas. W. Price	Consulting Safety Engineer	New York
Wm. Priebe	P. A. M. C. Co	Buffalo
John A. Pritchard	J. A. Pritchard & Co	Buffalo
Ralph E. Prouty	Ætna Life Ins. Co	Hartford, Conn.
Charles B. Puglisi	Plasterers' Union No. 30	Brooklyn
John C. Pulver	U. S. L. Batt. Corp	Niagara Falls
D. E. Quillinan	U. S. L. Batt. Corp	Niagara Falls
J. F. Quinlivan	International Ry. Co	Buffalo
James Geo. Quinn	Shredded Wheat Co	Niagara Falls
C. J. Raider	U. S. Fid. & Guar. Co	Baltimore, Md.
C. O. Rainey	Trico Products Corp	Buffalo
Charles N. Rall		Buffalo
L. A. Ralph	Buffalo Wire Wks. Co	Buffalo
Paul M. Romberger	U. S. L. Battery Corp	Niagara Falls
Charles W. Ramsperger	U. S. Rubber Reclaim. Co.	Buffalo
G. Ramsteck	State Dept. of Labor	New York
Stanley Rand		No. Tonawanda
R. H. Rand	Buffalo Bronze Die Cast. Co.	Buffalo
S. S. Randall	Buffalo Forge Co	Buffalo
Francis M. Randolph	Niagara Falls Power Co	Niagara Falls
H. B. Ranson	Shredded Wheat Co	Niagara Falls
Fred Raper	National Carbon Co	Niagara Falls
Louis E. Rauch	International Ry. Co	Buffalo
Michael Raum	Dohn & Fischer Co	Buffalo
G. S. Raven	Employers' Liab. Assn. Corp.	Snyder
H. K. Rawe	Dunlop Tire & Rubber Corp.	Kenmore
Mrs. Clara Raymond		Brooklyn
Harriet E. Raymond	Cantilever Corp	Brooklyn
Charles B. Read	Shredded Wheat Co	Niagara Falls
J. Mason Read	Kitlinge Co	Buffalo
E. B. Reagan	So. Buffalo R. R. Co	Buffalo
R. A. Reagan	Peckham Vocational School	Buffalo
William J. Reardon		Buffalo
H. E. Reavley	Shredded Wheat Co. (Can.)	Niagara Falls, Ont., Can.
H. Rechin	J. H. Williams & Co	Buffalo
C. E. Rectar	State Bureau of Rehabilitation	Buffalo
Anna Redder	Shredded Wheat Co	Niagara Falls
V. A. Redfield	The Citizens' Traction Co	Oil City, Pa.
Elmer E. Redlein	Sikes Chair Co	Buffalo
F. E. Redmond	Associated Industries, Inc.	Buffalo
John J. Redmond	State Department of Labor	Buffalo
Patrick H. Redmond	Rome Wire Co., General Cable Corp	Buffalo
C. M. Reed	Arco Vacuum Corp	Buffalo
E. J. Reed	American Malleables Co	Lancaster
William Reese	Jamestown Mut. Ins. Co	Jamestown
F. Reetz	Arco Vacuum Corp	Buffalo
J. G. Reichel	International Ry. Co	Buffalo
George M. Reid		La Salle
Herbert L. Reid	State Department of Labor	New York
John Reid		Niagara Falls
J. Harry Reid	American Optical Co	Buffalo
Robert Reid	Atterbury Motor Car Co	Buffalo
Walter Reid	Chevrolet Motor Car Co	Buffalo
Joseph Reidel	Rock Cut Stone Co	Syracuse
James A. Reilly	Kensington Wire Corp	Buffalo
Joseph S. Reincalm	Republic Met. Co	Buffalo
Joseph M. Reinhardt	Spencer Kellogg & Sons, Inc.	Buffalo
R. G. Reinig	Gould Coupler Co	Buffalo
G. E. Rekate	Magnus Co., Inc	Lancaster

NAME	AFFILIATION	LOCALITY
Maj. Henry A. Reninger.	Lehigh Portland Cement Co.	Allentown, Pa.
Paul E. Reynolds.....	Sterling Salt Co.....	Geneseo.
M. C. Rhenbottom.....	.....	Buffalo
F. S. Rice.....	New York Cent. R. R. Co...	Buffalo
Sidney G. Rich.....	Charles S. Rich Auto Repair.	Buffalo
J. F. Richards.....	Pennsylvania R. R. Co.....	Buffalo
J. E. Richardson.....	American Bridge Co.....	Elmira Heights
Glen H. Richmond.....	Donner Steel Co.....	Buffalo
William F. Rider.....	Arco Vacuum Corp.....	Buffalo
Vera M. Ridge.....	State Insurance Fund.....	Buffalo
Fred A. Riel.....	Atlas Steel Corp.....	Fredonia
Charles L. Rienzo.....	Rome Brass & Copper Co..	Rome
H. E. Riexinger.....	International Ry. Co.....	Buffalo
A. C. Rissberger.....	Rochester Gas & Elec. Corp.	Rochester
John L. Riter.....	Gt. Lakes Portland Cement Co.....	Buffalo
G. P. Roberts.....	Otis Elevator Co.....	Buffalo
R. E. Roberts.....	Niagara Falls Power Co....	Niagara Falls
W. H. Roberts.....	Hooker Electro-ChemicalCo.	Niagara Falls
A. R. Robertson.....	U. S. Rubber Reclaim. Co., Inc.....	Buffalo
Edward G. Robertson..	De Laval Separator Co....	Poughkeepsie
James O. Robertson.....	N. Y. State Conf., O. P. & C. F. I. A.....	Niagara Falls
A. E. Robinson.....	Hooker Electro-ChemicalCo.	Niagara Falls
F. J. Robinson.....	Bethlehem Steel Co.....	Buffalo
J. C. Robinson.....	Syracuse Chilled Plow Co...	Syracuse
G. G. Roddey.....	American Dist. Tel. Co.....	Buffalo
A. E. Rodgers.....	Norton Company.....	Chippewa, Ont., Can.
Harry R. Rodgers.....	Columbia Mills, Inc.....	Minetto
James J. Rodgers.....	General Carbonic Co.....	Buffalo
Walter K. M. Rodgers..	Metropolitan Cas. Ins. Co. of N. Y.....	Buffalo
R. George Roesch.....	Roesch Corp.....	Syracuse
W. Erle Rogers.....	U. S. Radiator Corp.....	Geneva
Jay L. Roof.....	Donner Steel Co.....	Hamburg
George J. Rooney.....	Plumbers' Union No. 1.....	Brooklyn
H. R. Rose.....	Atlas Steel Corp.....	Dunkirk
Charles J. Ross.....	Lehigh Valley R. R. Co.....	Buffalo
James Ross.....	U. S. Rubber Rec. Co.....	Buffalo
Anthony Rossie.....	International Ry. Co.....	Buffalo
A. A. Rossiter.....	Pyrene Mfg. Co.....	Syracuse
William J. Roth.....	Bausch & Lomb Optical Co.	Rochester
George Rothfuss.....	Buffalo Fdry. & Mach. Co..	Buffalo
Clara I. Rottger.....	Hooker Electro-Chemical Co.	Niagara Falls
Valentine A. Roush.....	Bond Plant, Amer. Radiator Co.....	Buffalo
H. E. Rowles.....	Stecher Litho. Co.....	Rochester
Joseph P. Rucinski.....	Kimberly-Clark Co., Inc....	Niagara Falls
John Rudinski.....	Buffalo Steam Pump Co....	No. Tonawanda
Arthur C. Rumsey.....	Kimberly-Clark Paper Co..	La Salle
Frank Rundel.....	Union Carbide Corp.....	Niagara Falls
A. Ruof.....	Buffalo Bronze Die Cast. Corp.....	Buffalo
Sol C. Ruslander.....	Markel Elec. Prod. Co.....	Buffalo
Edward F. Ryan.....	Buffalo, Roch. & Pitt. Ry...	Buffalo
Mrs. F. G. Ryan.....	Utica Mut. Ins. Co.....	Buffalo
H. A. Ryan.....	D., L. & W. R. R.....	Buffalo
John J. Ryan.....	State Department of Labor.	New York
James K. Ryan.....	.....	No. Tonawanda
W. H. Ryan.....	Ryan & Cable, Inc.....	Buffalo

NAME	AFFILIATION	LOCALITY
George Ryrie	U. S. Rubber Rec. Co.	Buffalo
John Sack	South Buffalo R. R. Co.	Angola
A. C. Salisbury	Spencer Kellogg & Sons, Inc.	Buffalo
Charles A. Sanders	American Cyanamid Co.	Niagara Falls, Can.
G. E. Sanford	General Electric Co.	Schenectady
N. L. Satchell	N. Y., Ont. & West. Ry. Co.	Middletown
A. C. Sauers	American Allsafe Co., Inc.	Buffalo
Joseph Saunders	National Aniline Co.	Buffalo
Philip S. Savage	Donner-Hanna Coke Corp.	Buffalo
R. T. Sawyer	Linde Air Products Co.	Buffalo
John C. Saylor	State Fed. of Labor, State of Delaware	Wilmington, Del.
Earle J. Scanlon	Rome Wire Co.	Buffalo
Florence Scanlon	Rome Wire Co.	Buffalo
Jacob F. Schaal	Federal Telephone Co.	Buffalo
Charles N. Scheelen	Buffalo Wire Works Co.	Buffalo
John C. Scheeler	Buffalo Wire Works Co.	Buffalo
Emory D. Schell	Rome Wire Co.	Buffalo
A. C. Schelosky	Power City Boiler Works	Niagara Falls
J. A. Schepperly	Amer. Car & Fdry. Co.	Buffalo
A. A. Scherer	Pillsbury Flour Mills Co.	Buffalo
Walter Scherum	Kensington Davis Co.	Buffalo
Angelo Schiaro	Pullman Co.	Buffalo
Mrs. Fred. J. Schick	King Mfg. Co.	Buffalo
Fred. Schick	King Mfg. Co.	Buffalo
Joseph Schieder	Stewart Motor Corp.	Buffalo
John M. Schilling	Housesmiths' Union No. 52.	New York
J. B. Schillo	Utica Mut. Ins. Co.	Buffalo
Norman Schmaltz	Buffalo Weaving & Belting Co.	Buffalo
Carl Schmidli	Kimberly-Clark Paper Co.	Niagara Falls
E. H. Schmidt	Consolidated Gas Co.	New York
George Schmidt	Hewitt Rubber Co.	Buffalo
William Schmidt	Buffalo Steam Pump Co.	Buffalo
L. C. Schmitt	International Ry. Co.	Buffalo
Paul F. Schnabel	Standard Oil Co. of N. Y.	New York
H. K. Schneider	Markel Elec. Products Co.	Buffalo
Ralph J. Schneider	Pierce Arrow Motor Car Co.	Buffalo
Cyrus P. Schoelles	DuPont Rayon Co.	Kenmore
Richard Schoenfeld	U. S. Rubber Reclaiming Co.	Buffalo
Miss E. B. Schoenlein	American Abrasive Co.	Buffalo
Wm. G. Schoenwetter		Hamburg
M. M. Schrader	Norton Company	Chippewa, Can.
William C. Schreiber	U. S. Aluminum Co.	Niagara Falls
Miss Louise Schrembs		Buffalo
Arthur E. Schroeder	Carbo Co.	Niagara Falls
Edward Schroeder	International Ry. Co.	Buffalo
Joseph Schroeder, Jr	American Radiator Co.	Kenmore
William H. Schuck	Washburn Crosby Co.	Buffalo
Frank Schultz	Spencer Kellogg & Sons, Inc.	Buffalo
Herbert L. Schultz	Carborundum Co.	Niagara Falls
May M. Schultz	Pillsbury Flour Mill Co.	Buffalo
C. B. Schumacher	Aluminum Co. of America	Niagara Falls
William F. Schwanke	U. S. Rubber Reclaiming Co.	Buffalo
A. Schwartz	Empire State Mut. Ins. Co.	New York
J. A. Schweig	Security Fire Door Co.	St. Louis, Mo.
George E. Schwenk	General Chemical Co.	Buffalo
Alex. Scott	American Brass Co.	Buffalo
Mrs. Ellen Scott	Ontario Dept. of Labor (Can.)	Toronto, Can.
Ewart Thos. Scott	U. S. L. Battery Corp.	Niagara Falls

NAME	AFFILIATION	LOCALITY
Frank Scott	Hamlin & Co	New York
Fred Scott		Lewiston
L. J. Scott	U. S. Rubber Reclaiming Co.	Buffalo
Mrs. Mary Scott	American Brass Co	Buffalo
F. S. Seaborne	Kimberly-Clark Co., Inc	Niagara Falls
Edwin H. Seaman		New York
Karl N. Searles	American Car & Fdry. Co	Buffalo
R. F. See	Harrison Radiator Corp	Lockport
Edward B. Seelbach	Hewitt Rubber Co	Buffalo
L. Carl Seelbach		Buffalo
Victor Seeley	Pierce Arrow Motor Car Co.	Buffalo
Dr. C. P. Segard	Third Ave. Ry. System	New York
Harold J. Segrave	Mine Safety Appliances Co.	New York
L. G. Seigfred	Goulds Pumps, Inc	Seneca Falls
William F. Seiler	Shredded Wheat Co	Niagara Falls
Samuel E. Seitz	Donner Steel Co., Inc	Buffalo
B. H. Self	Travelers Insurance Co	Brooklyn
Fred. H. Selmehardt	International Ry. Co	Buffalo
J. T. Semans	Bethlehem Steel Co	Buffalo
Joseph Sesansky, M.D.	Industrial Accident Clinics	Buffalo
Guerrirro Settini	Kimberly-Clark Co	Niagara Falls
Miss Severt	Young Women's Christian Association	Buffalo
W. H. Seymour	Liberty Mut. Ins. Co	New York
S. J. Shanahan	Dunlop Tire & Rubber Corp.	Buffalo
F. I. Sharp	Liberty Mut. Ins. Co	Buffalo
John R. Sharpe	Arco Steel, Amer. Radiator Co	Buffalo
Harry Sharples	U. S. Aluminum Co	Niagara Falls
William E. Sharron		Buffalo
E. S. Shartzer	Utica Mut. Ins. Co	Utica
Thomas J. Shaughnessy	Consol. Gas Co. of N. Y.	New York
James G. Shaw	Travelers Ins. & Indem. Co.	New York
William Shaw	Carborundum Co	Niagara Falls
Patrick Shea	Department of Labor	Utica
A. E. Shedler	Otis Elevator Co	Buffalo
F. T. Sheldon	Department of Labor	Buffalo
Jesse C. Shepard	Shepard Elec. Crane & Hoist Co	Montour Falls
John J. Sheridan	Royal & Eagle Indemnity Cos	New York
Miss E. Sherry	American Abrasive Metals Co	Buffalo
James E. Sherry	Niagara Junction Ry. Co	Buffalo
Samuel Shetrum	Hooker Electro-Chemical Co.	La Salle
Len Shewan	Niagara Alkali Co	Niagara Falls
Gertrude Shickler		Buffalo
George L. Shields	Buffalo Forge Co	Buffalo
V. Shimshack	Aluminum Co. of America	Niagara Falls
B. C. Shoemaker	Beaver Products, Inc	Akron
Walter N. Shoemaker	Hartford Acc. & Indem. Co.	Buffalo
A. E. Short	International Ry. Co	Buffalo
A. F. Sickles	Dolomite Products Co	Rochester
Edward Siedlikowski	M. Wile & Co	Buffalo
Joseph Silbert	American Allsafe Co	Buffalo
Isidor Silverman	Painters' & Decorators' Union No. 261	New York
Charles Simet	Spencer Kellogg & Sons, Inc.	Buffalo
C. E. Simmeth	Square Deal Co	Buffalo
Andrew G. Simmons	Department of Labor	Buffalo
Edward M. Simon	State Bureau of Rehabilitation	Buffalo

NAME	AFFILIATION	LOCALITY
Albert E. Simons	DuPont Rayon Co	Buffalo
Frank Simons	International Bus Co	Buffalo
Harry B. Simpson	Ocean Acc. & Guar. Corp.	New York
E. Sims	Lehigh Valley R. R. Co	Buffalo
N. M. Sims	Great Lakes Portland Cement Corp	Buffalo
Mark H. Skingley	U. S. Rubber Reclaiming Co.	Buffalo
J. V. Skinner	Norton Company	Niagara Falls
W. Slack	Aluminum Co. of America	Niagara Falls
Benj. J. Slater, M. D.	Eastman Kodak Co	Rochester
Margaret M. Slavin	Department of Labor	Buffalo
Richard L. Slosson	Laverack & Haines	Buffalo
C. Smates	Canadian Pacific Railways	Montreal, Can.
Clarence Smith	Corning Fibre Box Corp.	Corning
C. E. Smith	N. Y., Chic. & St. Louis R. R. Co	Cleveland, Ohio
Mrs. C. G. Smith		New York
C. G. Smith	State Insurance Fund	New York
Charles J. Smith	Lockhart-Hodge Co	Buffalo
C. L. Smith	Lockhart-Hodge Co	Buffalo
C. M. Smith	Travelers Insurance Co.	Buffalo
Edward E. Smith	Bethlehem Steel Co	Buffalo
Elsie E. Smith	Department of Labor	Buffalo
E. J. Smith	Bethlehem Steel Co	Buffalo
George Smith	International Ry. Co	Buffalo
George H. Smith	Great Lakes Portland Cement Co	Buffalo
Harrison A. Smith	Buffalo Forge Co	Buffalo
J. Gordon Smith	J. Gordon Smith Co., Inc.	Rome
J. T. Smith	Trunk Line Freight Inspection	Buffalo
L. G. Smith	Buffalo Bronze Die Casting Corp	Buffalo
M. I. Smith	Lockhart Hodge Co	Buffalo
Melvin J. Smith	Elm Vocational School	Buffalo
Murray D. Smith	Davis Emergency Equipment Co., Inc	New York
Peter J. Smith	Defiance Paper Co	Niagara Falls
R. P. Smith	Bethlehem Fabricators, Inc.	Bethlehem, Pa.
Sydney J. Smith	Department of Labor	Chappaqua
T. C. Smith	International Ry. Co	Buffalo
William Smith	Lehigh Valley Railroad Co.	Buffalo
W. G. Smith	Lockhart Hodge Co	Buffalo
D. P. Smithwick	DuPont Rayon Co	Buffalo
Albert Smoszna	Kensington Davis Corp	Buffalo
B. O. Snyder	North East Electric Co	Rochester
Elmer B. Snyder	New York Cent. R. R. Co.	Buffalo
L. V. Snyder	Westchester Lighting Co	Mt. Vernon
Miss Irma Sommer	Travelers Insurance Co	Buffalo
Charles J. Soulier	Landon Radiator Co., Inc.	No. Tonawanda
Louise T. Speers	Department of Labor	Rochester
Harry Spencer	J. H. Williams & Co	Buffalo
J. F. Spencer	Wear Proof Mat Co	Kenmore
L. L. Spencer	Travelers Insurance Co	New York
Arthur L. Speth	Pierce Plant, Amer. Rd. Co.	Buffalo
Frederick Spiller	Carborundum Co	Niagara Falls
Louis J. Spitzer	Hewitt Rubber Co	Buffalo
Leslie Spraggon	International Ry. Co	Buffalo
E. E. Sprague	Maryland Casualty Co	Buffalo
William F. Spranger	Doehler Die Casting Co	Batavia
Leo Sprickman	Consol. Expanded Metal Co.	Buffalo
W. C. Springman	P. A. M. Car Co	Buffalo

NAME	AFFILIATION	LOCALITY
S. D. Sprong	Engineering Products Corp.	New York
Herman Sprung	Fillmore Ave. Foundry & Iron Works, Inc.	Buffalo
R. D. Squires	.....	Buffalo
John Stafford	American Car & Fdry. Co.	Buffalo
Elmer R. Stall	John P. Hancock Co.	Buffalo
John J. Stall	Bureau of Weights & Measures	Buffalo
Katharine M. Stall	Department of Labor	Buffalo
John W. Stange	Buffalo Bolt Co	No. Tonawanda
R. D. Stanmyre	Ætna Life Insurance Co.	Syracuse
J. E. Stark	Board of Education Manual Training	Buffalo
George W. Starling	Harrison Radiator Corp.	Lockport
Mrs. O. J. Stayley	.....	Buffalo
M. H. Stearns	Donner Steel Co.	Buffalo
William H. Stebbins	Bethlehem Steel Co.	Buffalo
E. C. Steeb	Buffalo *News*	Buffalo
B. F. Steele	.....	Buffalo
Ida S. Steele	Buffalo, Niagara & Eastern Power Corp	Buffalo
Joseph Stein	.....	Buffalo
A. Steketee	Columbia Casualty Co.	Rochester
H. S. Stender	Royal Indemnity Co.	Brooklyn
Anthony Stephan	.....	Buffalo
J. W. Stephenson	International Ry. Co	Buffalo
C. G. Sterger	Trico Products Corp	Buffalo
Willard F. Sterne	American Allsafe Co., Inc.	Buffalo
George Stevens	Fink-Dumont & White, Inc.	New York
C. F. Stevenson	Great Lakes Portland Cement Corp	Lockport
Ray P. Stewart	Allied Mutual Liability Ins. Co	Buffalo
H. W. Stickle	King Manufacturing Corp.	Buffalo
D. E. Stilp	Kimberly-Clark Co., Inc.	Niagara Falls
John Stilwell	Consolidated Gas Co	New York
Arnold Stoelting	.....	La Salle
F. L. Stone	International Ry. Co	No. Tonawanda
Geo. W. Stone	Hooker Electro-Chemical Co.	Niagara Falls
S. J. Stone	The John W. Cowper Co., Inc	Buffalo
H. C. Stonier	American Bridge Co	Elmira Heights
Ray Stoos	Buffalo Forge Co	Buffalo
Garfield Storin	Niagara Alkali Co	Niagara Falls
Charles W. Storke	Employers' Association	Auburn
L. H. Storm	Employment Dept., Inter. Ry. Co	Buffalo
W. E. Stormer	International Casement Co.	Jamestown
Arthur Stoutland	Carpenters' Union No. 2305.	Brooklyn
W. J. Stowman	International Bus Corp.	Buffalo
John D. Strain	Industrial Association	Utica
C. H. Strasser	Norton Company	La Salle
William E. Streicher	Niagara Gorge Railroad Co.	Niagara Falls
George C. Stroke	Spencer Kellogg & Sons, Inc.	Getzville
J. E. Strzelczyk	National Aniline & Chemical Co	Buffalo
E. H. Stuart	State Insurance Fund	Buffalo
E. W. Stuhr	Archer Daniels Midland Co.	Buffalo
Henry O. Sturm	U. S. Light & Heat Co.	Buffalo
Bertram Styles	Buffalo Safety Club	Buffalo
Ellen M. Sullivan	.....	Buffalo
Fred Sullivan	Donner-Hanna Coke Corp.	Buffalo

NAME	AFFILIATION	LOCALITY
James Sullivan	Bureau of Education	Albany
John Sullivan	State Federation of Labor	New York
E. F. Sverdrup	U. S. Rubber Reclaiming Co.	Buffalo
E. E. Swain	U. S. L. Battery Corp.	Niagara Falls
R. V. Swain	Y. M. C. A. Inst. of Tech.	Buffalo
C. E. Swank	Dayton Malleable Iron Co.	Dayton, Ohio
Maud Swartz	Women's Trade Union League	New York
Edw. J. Sweeney	U. S. L. Battery Corp.	Niagara Falls
W. H. Sweetman	Niagara Alkali Co.	Niagara Falls
H. P. Swenson	Ætna Life Insurance Co.	New York
G. E. Swezey	Standard Oil Co. of N. Y.	Buffalo
R. C. Swift	Buffalo Cold Storage Co.	Buffalo
Joseph B. Switzer	Smith & Sons Corp.	Buffalo
V. Sylvester	Carborundum Co.	Niagara Falls
H. O. Symness	Union Carbide Co.	Niagara Falls
M. W. Talcott	W. O. & M. W. Talcott	Providence, R. I.
William Tanski	International Ry. Co.	Buffalo
H. J. Tarnow	Semet-Solvay	Syracuse
Alexander R. Tausky	New York Dept. of Law	New York
C. E. Taylor	The Fyr-Fyter Co.	Dayton, Ohio
George T. Taylor	Standard Oil Co.	Orchard Park
C. G. Telfer	Ontario (Can.) Dept. of Labor	Ontario, Can.
W. C. Templer	Corning Glass Works	Corning
P. G. Tesi	Department of Labor	Buffalo
C. S. Thayer	Aluminum Co. of America	Niagara Falls
William Then	Great Lakes Portland Cement Co.	Buffalo
James A. Thomas	Carborundum Co.	Niagara Falls
R. B. Thomas	Structural Steel Board of Trade	New York
S. A. Thomas	Rome Wire Co.	Buffalo
Alan H. Thompson	Pratt & Letchworth Co.	Buffalo
Miss A. M. Thompson	Russell Burdsall & Ward Bolt & Nut Co.	Port Chester
Alexander Thompson	U. S. Aluminum Co.	Niagara Falls, Ont., Can.
Allison Thompson	Thompson Electric Co.	Cleveland, Ohio
C. H. Thompson	Eastman Kodak Co.	Rochester
Charles J. Thompson	Kimberly-Clark Co.	Lewiston
George H. Thompson	Carborundum Co.	Niagara Falls
Harry C. Thompson	Seneca Vocational School	Buffalo
L. W. Thompson	International Ry. Co.	Buffalo
O. C. Thompson	Niacit Chemical Corp.	Niagara Falls
Robert P. Throne	R. E. Dietz Company	Syracuse
Charles E. Tiernan	Elevator Constructors' Union No. 1	New York
B. W. Tierney	New York Railways Corp.	New York
L. S. Tiffany	Beaver Products Co.	Akron
H. C. Tillock	U. S. L. Battery Corp.	Niagara Falls
V. V. Tilson	Western Union Telegraph Co.	New York
H. W. Tinker	New York Cent. R. R. Co.	New York
William Tinkler	American Bridge Co.	Elmira
Mabel L. Todd	National Biscuit Co.	Buffalo
Elmer B. Tolsted	Fonda-Tolsted, Inc.	Chicago, Ill.
George Tompkins	New York Air Brake Co.	Watertown
Anna Townsend	American Brass Co.	Buffalo
J. N. Townsend	King Mfg. Co.	Buffalo
William Tramkle	Buffalo Bronze Die Casting Corp.	Buffalo

NAME	AFFILIATION	LOCALITY
M. L. Trewel	Aluminum Co. of America	Niagara Falls
Frank R. Tubb	American Brass Co	Buffalo
E. F. Tucker	The U. G. I. Contracting Co.	Philadelphia, Pa.
F. M. Turner	Bethlehem Steel Co	Lackawanna
R. S. Turner	West Va. P. & P. Co	Mechanicville
Robert T. Turner	Shepard Elec. Crane & Hoist Co	Montour Falls
Fred A. Tyler	American Laundry Machine Co	Rochester
Joseph W. Tyrrell	Peckham Vocational School	Depew
G. C. Ullrick	Republic Metalware Co	Buffalo
Henry Urquhart	Aluminum Co. of America	Niagara Falls
Henry Urtil		La Salle
Frank R. Valentino	Plasterers' Union No. 30	Brooklyn
Fred Van Aernam	Hartford Acc. Ins. Co	Buffalo
Douglas Van Aken	Binghamton Light, Heat & Power Co	Binghamton
Noah Van Cleef	Van Cleef Bros	Chicago, Ill.
Joseph M. Vanderpool	Carpenters' Union No. 366	Crestwood
F. A. Van De Walker	Dunlop Tire & Rubber Co	Kenmore
F. B. Van Doren	Utilities Mutual Insurance Co	Rochester
Charles Van Ness	International Railway Co	Buffalo
C. Vanone	Carborundum Co	Niagara Falls
J. C. Van Vleet	Buffalo General Electric Co.	Buffalo
C. N. Vasfinder	Canadian Niagara Power Co.	Niagara Falls, Can.
John R. Vawter	Iroquois Gas Corp	Buffalo
C. Vedder	Niagara Falls Power Co	Niagara Falls
Wm. Venator	Geo. Lobe Sons Co	Buffalo
A. Vergnasco	Singer Mfg. Co	Brooklyn
C. V. Vigar	Con. Exp. Metal Co	Buffalo
William Voelkle	Buffalo Forge Co	Buffalo
Chris. A. Vogel	The Federal Portland Cement Co	Gowanda
C. A. Vogelman	American Brass Co	Buffalo
Arthur R. Volkman	R. & H. Chemical Co	Niagara Falls
W. Von Bacho	Industrial Clinic	Fairport
F. C. Vroman	Otis Elevator Co	Buffalo
William Wagner	The Savory Co	Buffalo
Robert Wahl	Pierce Arrow Motor Car Co.	Buffalo
Frederick Wahlert	Pulmosan Safety Equipment Corp	Brooklyn
William H. Wahlert	Pulmosan Safety Equipment Corp	Brooklyn
Chester Waite	Travelers Insurance Co	New York
P. D. Walbridge	Donner-Hanna Coke Corp	Buffalo
E. G. Waldron	Fillmore Ave. Foundry & Iron Works	Buffalo
Mrs. Wm. Wales		Buffalo
William Wales	Travelers Insurance Co	Buffalo
Martin K. Walkowski	Pullman Car Shops	Buffalo
Chas. R. Wallace		Buffalo
Grace E. Wallace		Buffalo
Harry F. Wallace	Shredded Wheat Co	Niagara Falls
Mrs. Margaret Wallace		Buffalo
Ralph R. Walling	Champion Sheet Metal Co	Cortland
Chas. J. Walsh	Carborundum Co	Niagara Falls
Edmond J. Walsh	International Railway Co	Buffalo
John J. Walsh	American Tel. & Tel. Co., and N. Y. Tel. Co	Buffalo
J. T. Walsh		Buffalo

NAME	AFFILIATION	LOCALITY
T. O. Walsh	American Optical Co.	New York
Joseph L. Walter	Spencer Kellogg & Sons, Inc.	Buffalo
V. G. Walton	Canadian Shredded Wheat Co.	Niagara Falls, Can.
John D. Wanzer	De Laval Separator Co.	Poughkeepsie
Frank M. Ward	Otis Elevator Co.	Yonkers
George C. Ward	Department of Labor	Brooklyn
Joseph Ward	Elevator Constructors' Union	New York
J. M. Ward	Delaware, Lackawanna & Western R. R. Co.	Syracuse
M. C. Warner	Standard Oil Co. of N. Y.	Buffalo
Vera B. Warren	Carborundum Co.	Niagara Falls
Herbert L. Washburn	Aluminum Co. of America	Niagara Falls
John Washington		Tonawanda
Charles A. Waters	Commonwealth of Penna.	Harrisburg, Pa.
Reginald Waters	Aluminum Co. of America	Buffalo
S. G. Watkins	Boston & Maine R. R.	Boston, Mass.
A. J. Watson	Carborundum Co.	Niagara Falls
A. L. Watson	The Koppers Co.	Pittsburg, Pa.
John Watson	Aluminum Co. of America	Niagara Falls
J. M. Wayler	Carpenters' Union No. 2236.	New York
C. H. Weaver	Union Carbide Co.	Niagara Falls
Geo. Weaver		Niagara Falls, Ont.
J. A. Weaver	Bethlehem Steel Co.	Lackawanna
Roy E. Weaver	Great Lakes Portland Cement Co.	Buffalo
Geo. W. Webb, Jr.	Jos. T. Ryerson & Son, Inc.	Buffalo
Arnold Webber	Carborundum Co.	Niagara Falls
Chas. J. Weber	New York Central R. R. Co.	Buffalo
Gertrude N. Weber	National Biscuit Co.	Buffalo
Wm. J. Weber	Magnus Co., Inc.	Lancaster
Robt. R. Webster	Department of Labor	Buffalo
J. W. Weed	Postal Telegraph-Cable Co.	Buffalo
Hon. Charles H. Weeks	New Jersey Dept. of Labor	Trenton, N. J.
James Weht	American Radiator Co.	Buffalo
Frank P. Weil	Arco Vacuum Corp.	Buffalo
Walter J. Weiman	Rock Cut Stone Co.	Auburn
E. R. Weimer	The Shredded Wheat Co.	Niagara Falls
John F. Weir	Member, Advisory Comm., State Insurance Fund	Rochester
J. P. Weis	Metropolitan Sewing Machine Co.	Nyack
Fred Weiss	King Mfg. Co.	Buffalo
Miriam Weitzel	Department of Labor	Buffalo
Arthur H. Welch	U. S. L. Battery Corp.	Niagara Falls
J. H. Welch	Patent Scaffolding Co.	Buffalo
D. Wendel	Wood Products Co.	Buffalo
Ben Wendt		Niagara Falls
Eugene M. Werle	Elm Vocational School	Buffalo
W. E. West	Carborundum Co.	Niagara Falls
W. T. West	Jos. T. Ryerson & Son	Buffalo
M. Harry Westbrook	Locomotive Shops, Grand Trunk Western Ry. Co.	Battle Creek, Mich.
Frederick John Weston	Kimberly-Clark Co.	La Salle
J. R. Weygomo	Shredded Wheat Co.	Niagara Falls
C. M. Whalen	Donner Steel Co., Inc.	Buffalo
John G. Wheatley	Columbia Casualty Co.	New York
L. N. Wheaton	Republic Metalware Co.	Buffalo
C. H. Wheeler	Shredded Wheat Co.	Niagara Falls

NAME	AFFILIATION	LOCALITY
L. O. Wheeler	Union Carbide Co	Niagara Falls
Maxwell S. Wheeler	Associated Industries and Larkin Co	Buffalo
Hon. James S. Whipple	New York State Industrial Board	New York
Ernest U. Whitacre	The Positive Safety Mfg. Co.	Cleveland, Ohio
C. P. White	Simonds Saw and Steel Co.	Lockport
J. B. White	Hooker Electro-Chemical Co.	Niagara Falls
J. H. White	Carborundum Co	Niagara Falls
John J. White	Housesmiths' Union No. 52.	New York
Frank N. Whiting	Niagara Alkali Co	Niagara Falls
C. K. Whitmire, Jr	American Car & Foundry Co	Buffalo
R. T. Whitzel	U. S. Aluminum Co	Niagara Falls
J. J. Wick	Barcalo Mfg. Co	Buffalo
Paul Wicks	The Koppers Construction Co	Lackawanna
Daniel Widdi	Burns Bros	New York
Herbert Widdup		Buffalo
Francis J. Wiesner	Rome Wire Co	Buffalo
M. W. Wiesner	Dahlstrom Metallic Door Co	Jamestown
E. N. Wigle	Niagara Falls Power Co	Niagara Falls
R. E. Wilkin	Standard Oil Co., Inc	Chicago, Ill.
Geo. H. Wilkinson	Otis Elevator Co	Buffalo
Mrs. Grace Williams	Pullman Co	Buffalo
G. H. Williams	Wright & Kremers	Niagara Falls
H. Williams	General Plastics Co	No. Tonawanda
Philip A. Williams	Carborundum Co	Niagara Falls
R. S. Williams	Pullman Co	Buffalo
Wm. J. Williams	Niagara Alkali Co	Niagara Falls
W. R. Williams	Travelers Insurance Co	Buffalo
A. M. Williamson	Acheson Graphite Co	Niagara Falls
Wallace J. Willoughby	International Railway Co.	Buffalo
H. Wilm	Otis Elevator Co	Buffalo
D. R. Wilson	Wilson Foundry & Machine Co	Pontiac, Mich.
G. M. Wilson	Canadian National Railways	Stanford, Ont., Can.
Mrs. James A. Wilson	Pullman Co	Buffalo
James A. Wilson	Pullman Co	Buffalo
John Wilson	Niagara Gorge R. R. Co.	Niagara Falls, Can.
R. C. Wilson	Pierce Arrow Motor Car Co.	Buffalo
C. D. Winchester	Universal Gypsum & Lime Co	Akron
Charles M. Winchester	J. B. Lyon Co	Albany
F. H. Wing	Board of Education	Buffalo
Harold Winkelses	Buffalo Scale Co	Buffalo
Geo. J. Winkle	Department of Labor	Olean
H. J. Winney	State Insurance Fund	Syracuse
W. D. Wishart	Bausch & Lomb Optical Co.	Rochester
D. O. Whitman	The Roessler & Hasslacher Chemical Co	La Salle
Herman F. Woege	Shredded Wheat Co	No. Tonawanda
Bernhard Wolf		Buffalo
C. J. Wolf	Kensington Davis Corp	Buffalo
Mrs. H. A. Wolf		Tonawanda
H. Arnold Wolf	Buffalo Bolt Co	No. Tonawanda
Jacob Wolf		Winfield
Geo. W. Wood	Shepard Electric Crane & Hoist Co	Montour Falls

NAME	AFFILIATION	LOCALITY
H. C. Wood	The Safety Equipment Service Co	Pittsburg, Pa.
W. W. Wood	Baltimore & Ohio R. R. Co.	Baltimore, Md.
H. M. Woodbury	Wm. A. Rogers, Ltd	Niagara Falls
Howard Woods	National Aniline Chemical Co	Buffalo
Jesse H. Woodworth		Buffalo
J. E. Worrall	American Can Co	New York
James A. Wortman	DuPont Rayon Co	Buffalo
D. Lois Wosemuth	Hewitt Rubber Co	Buffalo
Jack Wozniak	Barcalo Mfg. Co	Buffalo
William Wrege, Jr	Carborundum Co	No. Tonawanda
A. E. Wright	Western Union Telegraph Co	Cleveland, Ohio
Ben D. Wright	The Shapleigh Wright Co	Lockport
Chester W. Wright	Wright & Kremer, Inc	Niagara Falls
Jack Wright	National Carbon Co., Inc.	Niagara Falls
Geo. P. Wyckoff	Postal Telegraph-Commercial Cable Co	Buffalo
William Wylie	Union Carbide Co	Niagara Falls
S. A. Xippas	Republic Metalware Co	Buffalo
George Yaeger		Kenmore
H. P. Yeager	Fedders Mfg. Co	Buffalo
H. C. Yokam	American Car & Foundry Co	Buffalo
Clyde H. York	Y. M. C. A. Inst. of Tech	Dunkirk
C. L. York	General Electric Co	Schenectady
Joseph H. Young	Larkin Co., Inc	Buffalo
J. W. Young	Jeffrey-Fell Co	Buffalo
L. W. Young	Buffalo Fire Appliance Corp.	Buffalo
H. J. Youngert	Pierce Arrow Motor Car Co.	Buffalo
Kathryn M. Yox	State Insurance Fund	Buffalo
L. S. Yuill	Domor Chair Co	Buffalo
Fred Zabel	Carborundum Co	Niagara Falls
Joseph C. Zachmyc	G. Elias & Bro., Inc	Buffalo
Mike Zajac	National Carbon Co., Inc.	Niagara Falls
Maxwell J. Zboralski	Department of Labor	Buffalo
H. Zelns	Beaver Products Co., Inc.	Akron
Frank Zerr	Carborundum Co	Niagara Falls
John H. Zeigler	International Railway Co.	Buffalo
Helen Zimmer	Department of Labor	Buffalo
O. A. Zimmer	Department of Labor	Buffalo
Franklin L. Zimmerman	J. Gordon Smith Co	Rome
H. A. Zimmerman	Hall Baking Co	Buffalo
John R. Zimmerman	Rome Wire Co	Buffalo
John A. Zink	Pierce Arrow Motor Car Co.	Buffalo
J. B. Zook	Great Lakes Portland Cement Corp	Buffalo

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